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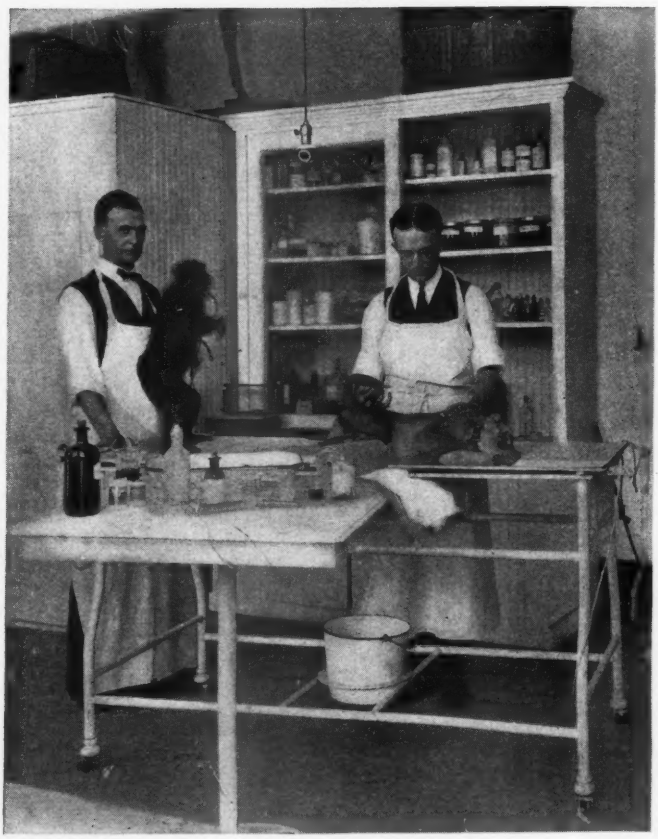

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VOL. XII APRIL, 1917 No. 4

The Sterile and Shy Breeding Stallion*

By W. H. WELCH, Lexington, Illinois.

ALL normal, mature stallions should be potent, and with proper care and management, should retain their procreative powers throughout their lifetime. That they are not so, is either because of organic, anatomical defects, or is due to functional derangement, the result of mismanagement and disease. All stallions, whose sexual apparatus is normal, if taken in hand before they had done any service in the stud, may under proper management be developed into very reliable foal getters. Any stallion, under improper methods of handlings may be made a very uncertain sire, or rendered absolutely sterile.

Potency in the stallion, must depend, primarily, on the physical ability of that animal to successfully copulate, and to transmit to the vagina of the mare, spermatazoa possessing sufficient vitality to reach the cornua of the uterus, where impregnation of the female ovum usually occurs. While we might concede the possibility of viewing an animal whose sexual apparatus is entirely normal, as sexually fertile, even though possessed of some deformity rendering the act of coition impossible, yet since those conditions prevent him from doing service, he is from a breeder's standpoint impotent. Likewise we view the testicles as the chief organ concerned in reproduction, since they produce the male sperm cell, yet it is no doubt fully as important that Cowper's glands, the prostate, and the vesiculae seminales be also in healthy condition and properly functionating also. It is essential therefore that his locomotory apparatus be sufficiently normal, to permit him to mount and that his sexual organs also normally perform their proper functions.

*Read at semi-annual meeting Illinois Veterinary Medical Association, Peoria, July, 1916.

Hindrances to Copulation

We will but briefly mention those conditions which may render the stallion incapable of performing the copulatory act. Since any lengthy consideration of them is plainly unecessary. Paraplegia, hemiplegia, inflammation of the spinal cord, acute or chronic osteo-porosis, anchylosis of lumbar vertebrae, lumbago, rheumatism, and any painful disease or injury to posterior limbs or other parts, such as open joints, ringbones or bone spavins of a bad character.

Again the stallion may be perfectly able to mount and still unable to complete the act of coition. Paralysis of penis is perhaps the most common cause of this, but the list may include hernias, tumors on penis or sheath (it being a favorite location for bursattee) swelling of penis and chronic induration which persist in the form of thickened rings around the organ, preventing the retracting of the organ within the sheath, or even preventing coition. Exclusive of abnormal swellings and enlargements, the size of the penis undoubtedly plays an important part in the matter of a prolific sire, since it is a well recognized fact among horsemen that a stallion possessing an unusually large penis is never a very sure sire, the reason being that on account of the size of the penis, the mare is caused unusual pain, and undue straining is endulged in, causing the semen to be expelled.

Other Causes of Impotence

Spasm of the penis, is a nervous disorder affecting the copulatory act of stallions, and is due to overconditioning. Plethoric, overfed stallions that have not been properly

exercised often show this condition in the early parts of their season to a greater or less extent. As a rule he appears exceptionally amorous, and very quickly gets an enormous erection. Upon mounting the mare, and introducing the penis, he proceeds as in a usual service, for a few strokes, when he suddenly withdraws it, backs up a ways, and again re-enters or perhaps dismounts with the penis still fully erected. This process might be repeated for hours, or days, and rarely indeed would a service be completed by the ejaculation of semen. Sometimes a reduction in feed and plenty of exercise or perhaps the addition of a light purgative tends to alleviate this condition, so that in a week or so, he will begin making a normal service. At other times, nothing benefits, except putting the animal to steady work, reducing his flesh and toning up the entire system, which means the loss of an entire season's business for the owner. I have observed this condition in more than a dozen stallions, and they have invariably been stallions of coarse plethoric, sluggish type, most of them possessing a large penis. Some of these had been fitted for the show ring, and had held their show ring form for a considerable length of time. Several had had previous attacks of orchitis, but as to whether this enters into the matter or not as a causative agent, I am unable to state positively.

Sterility Due to Faults of Development

Passing to a consideration of sterility, depending more intimately on the sexual organs themselves, we will mention those congenital defects of the testes, chief among which is the undeveloped testicle, such as is found in the hermaphrodite, the hybrid, the cryptorchid and in some twins. These testicles are similar in character to the fetal testicle, and of course are necessarily sterile. At other times the real testicle structure may be of such rudimentary character as to be almost wholly insignificant, and recognizable only by means of its attachments and relations. Not infrequently they are the seat of cysts of various kinds, and teeth, skin and hair, and calcareous deposits are contained therein, while they are by no means exempt from being affected with tumors of a malignant type.

In the hermaphrodite, the entire reproductory system shows various degrees of development, while the testicles vary greatly as to location, and the animal is never fertile. In the hybrid, they are uniformly fetal in development and normal in location.

The cryptorchid is permanently sterile only when both testicles are retained within the abdominal cavity. When one testicle has descended into the scrotal sac, the animal is as potent as any normal stallion. What we term the inguinal ridgling or flanker, will become fertile when the testicle has arrived within the scrotum, and has reached a mature state of development which it will invariably do, so that it is only the abdominal cryptorchid which is to be considered as permanently sterile. In the human cryptorchid, the abdominal testicle is by operation brought into the scrotum, where eventually it functions properly. I do not know of its having been successfully done in the stallion, but it is within the range of possibility.

I wish to bring to your attention another anomolous condition in cryptorchids that I have found on four different occasions and mention of which was made in a previous paper read before this association, and which I am constrained to believe is by no means uncommon. Normally the epididymis is closely adherent to the testicle, but in this condition the distance between the two has varied from ten to eighteen inches. Sometimes the epididymis is in the scrotum, and testicle in abormal cavity, and at other times both are in abdominal cavity. Naturally this condition renders an animal sterile.

Cryptorchidy Not Hereditary

I cannot pass this point without here recording my experience with the cryptorchid stallion, which is at variance with most authorities and commonly accepted ideas, and state that it is my opinion that the cryptorchid stallion, swinging but one testicle does not produce a greater number of ridglings than the average normal sire. I consider this to be an abnormality apt to be found in no less numbers among the progeny of any stallion, and after a rather extensive acquaintance with the get of several of these cryptorchids, I am compelled to say that I consider the hereditary feature of this condition to be more a mith than a reality.

Orchitis and Epididymitis

The reproductive organs are all subject to the attacks of disease, and injuries calculated to destroy to a greater or less extent the fertility of that animal. Chief among all of these is orchitis or perhaps more properly speaking, we should include epididymitis, since clinically they are not readily differentiated, being due to the same causes and presenting about the same line of symptoms. They require the same treatment and are equally dangerous as to destroying the fertility of the animal. Orchitis might occur alone and destroy

a testicle. Epididymitis alone is not impossible, and by lessening the lumen through which must pass the semen, might cause sterility, or even lead to degeneration of the testicle, even though that organ had really never been involved in the inflammatory process. These diseases merit more attention than is usually given them by either college curriculae or practitioner. They are far more common than the average practitioner will acknowledge on first thought. That they often occur in the young growing animal before he has reached the age of puberty, we are all forced to admit, since in the castration of many yearlings we see the results of previous infections as evidenced by adhesions between the various coverings of testes, or at times complete degeneration of all testicle structure. The secreting portion of the testicle is very soft and vascular, its framework is unusually fibrous and stout, so that it does not require a very severe engorgement or inflammation to permanently destroy its usefulness. In the stallion colt, orchitis is no doubt often caused by the irritation of hernias, so common among foals, the greater part of which are remedied by nature before they reach their yearling form. In the mature and breeding stallion, orchitis occurs as a result of undue sexual excitement and excessive stud service, especially at the beginning of a season, and very frequently as a sequel of influenza.

To my mind, hydrocele means a chronic orchitis and should be viewed with suspicion at all times.

Sterility Due to Venereal Diseases

We have mentioned influenza as a great factor in producing orchitis, but not as a direct causative agent, producing sterility. Naturally all diseases of a debilitating nature, weaken the system and cause semen of a low vitality to be secreted. Influenza however does not stop there, but may be transmitted directly by copulation, many authorities maintaining that they have been known to transmit the disease for two years after an apparent convalescence. Coupled with the fact that influenza also affects the mares of a neighborhood, and that when they are thus affected the weakened ova fails to become impregnated, or if fecundated it is carried but a short time and aborted, we see in influenza, perhaps the most potent factor in the reduction of the number of foals in a community, and in my opinion it is directly responsible for the loss of a considerable number of foals, usually attributed to contagious abortion. The germs of contagious abortion are spread by the penis of the stallion and transferred from mare to mare, as well as are also the specific venereal diseases of the horse, and each of these play an important part in the fertility of a service.

Mismanagement the Greatest Cause of Impotence

I have enumerated the above contributing causes of the shy breeding or sterile stallions. They are such as are found in the average text book, but I have not yet mentioned the greatest factor in the production of a sterile stallion. It is the owner himself, who by mismanagement, takes a fertile sire, and by his acts invites the attacks of disease or weakens the reproductory system to such an extent that the animal is no longer a sure breeder. I believe I am absolutely safe in saying that the procreative powers of more stallions are ruined during the first two warm weeks that occur in early spring time than during the rest of the year. It is at this time that the mare owner, discovering his mare in heat, and the warm weather betokening the advent of the breeding season, journeys with her to the sire of his selection. Other mare owners having decided that an early colt or two will interfere less with the farm work, are there also. Business is booming with the stallion owner. Every mare that comes is a new one added to his list. Within a week he has perhaps bred a dozen or more and within two weeks he has perhaps 20 or 25 and then he later wonders why his stallion that always settled his mares before in a satisfactory manner, has now ceased to do so. Hasn't he fed him just as much as usual? Hasn't he had all the exercise he wanted to take in a 10 by 10 box stall or perhaps an open lot fully 20 feet square? He certainly looks as good or better than usual. He fails to understand that by imposing such excessive stud duty without previous preparation on an animal whose reproductive organs have laid dormant for several months that he has weakened the vitality of the testicles, until perhaps they will never again secrete a vigorous spermatozoa.

Let us consider that the testicles are the main secreting gland of the reproductive system in that it produces the male sperm, which fecundates the female ovum. The secreting portion of it is of quite soft structure and vascular, the framework surrounding it is very fibrous, so that but little engorgement is needed to destroy the function of the gland. With the first service of the spring time, nature sends into those testicles an increased flow of blood, and with each succeeding service, the spermatic

artery accommodates itself in size and volume of blood carried, to the needs of these organs. Engorgement and inflammation invariably follow sudden excessive use, weak spermatazoa are secreted, which have not the power of locomotion necessary to reach the ovum of the mare when deposited within the vagina or the secreting function of the testicle is forever destroyed.

Let us then preach unto the stallion owner a gospel of preparedness, not only a proper preparation of the organs of reproduction, but a preparation of the systemic vigor of his stallion as well.

Proper Conditioning for Stud Service

This preparation should begin early in the year. If the stallion is not worked a few hours daily, he should at least be led a distance of four to eight miles. Preferably he should be thin rather than in high flesh as a fat stallion cannot be put into good breeding condition and he should be putting on flesh during the breeding season, rather than to be obliged to deplete him. The practice of most buyers, delaying their purchases until well toward spring is a bad policy, as they invariably get a fat horse from a dealer who in order to realize the high dollar for his animal is compelled to place him in a fat condition that is not conducive to prolificacy in a sire. He should be fed well during the time he is performing the heavy part of his stud duties. Oats and bran fed dry, are the ideal grain ration, with perhaps a light feed of corn once daily. For hay, timothy is to be preferred to all others, and what grass he will consume in 20 to 30 minutes, once daily. The clovers are not a good hay for a breeding animal, as it is a well-known fact among horsemen that animals on a clover diet, do not conceive so readily as others.

A Month to Get to a Mare a Day

The preparation of a stallion's reproductive organs are the most important. Beginning about a month before the opening of the breeding season he should be given one service and several days should elapse before another is allowed.

One service the first week, two the second, three or four during the third week, and take a month to get him on one mare a day is a very good rule. I believe that there would be more colts to show at the end of the season if all stallions were kept on not more than one mare per day, but custom has made a rule of at least two services daily, and most stallions that are given a good preparation for their stud duty seem to be quite sure on that number. However, there are many stallions that are quite fertile on one mare daily that are very shy breeders when allowed two services. The microscope can here be used to good advantage in collecting the semen, as it drops from the mare and spreading it on glass, any cheap magnifying lens answering the purpose very well. You will oftentimes be unable to find any spermatazoa in the stallion that is to be bred too heavily.

Let me say that I believe too many of us, give the owner our sanction to use a stallion much too soon following an attack of orchitis, and also following influenza. Most cases of orchitis should be followed by a complete discontinuance of all stud duty, until the following season, that the testicles may have a chance to resume their previous healthy condition. No stallion whose system has been depleted by a severe case of influenza or its complications, can do himself justice, in the stud until he has recovered his full vigorous condition and we should hesitate to endanger the future usefulness of that animal by permitting him to return to service, until we feel that he has reached that "pink of condition," which all stallions should maintain.

In conclusion let me say that this paper has been written solely for the idea of spreading the gospel of preparedness, e. g., preparing the stallion for his spring stud duty. As well except a race horse with no preparation to take a prominent place in a six or seven heat race, as to expect a stallion to give a good account of himself, when he is compelled to jump into heavy service the first warm week of spring. I hope that veterinarians will spread that gospel more in the future than in the past, and if I have been the means of getting that dirty, ill-kept, manure covered stallion out of the old box stall a month earlier than heretofore, my desire will have been attained.

Science can announce what she knows today. She can also mark off exactly what she does not know. But to say what she will or will not at any time know is not her office.—(Nardow.)

Intussusception of the Intestines of the Sheep

By Dr. B. F. Kaupp, West Raleigh, N. C.

In this reprint from the January, 1917, issue of the *Journal of the A. V. M. A.*, Dr. Kaupp describes a case showing this condition, which is a rare one in sheep. The account is illustrated with a photographic reproduction of the intussuscepted intestine.

Vesicular Stomatitis Contagiosa

By JAMES GREGG, F. X. McGUIRE, G. J. GLOVER, A. GILLESPIE and G. GREGORY, of the British Remount Hospitals and Laboratory, Newport News, Va.

DURING the last four months several thousand cases of the above named disease have come under the observation of the writers of this paper.

The conclusions drawn from such observations have lead us to define, "Vesicular Stomatitis Contagiosa" as a contagious, febrile disease, in this case affecting horses and mules, with the principal pathological changes confined to the tongue, buccal mucous membrane, lips and occasionally the nose.

Cause.—This has been a much mooted question, however, the reader may draw his own conclusion after reading the part of this paper on the bacteriology of the disease.

Susceptibility.—Eighty-five per cent exposed horses, 75 per cent exposed large mules and 25 per cent exposed small mules.

Period of Incubation.—One to three days.

Course.—Seven to ten days, terminating usually in complete recovery. In rare instances on seas, paralipsis of the tongue, this usually recovers in fourteen days.

From our observations it appears that one attack renders an immunity.

Symptoms.—Animals stand about listlessly, large quantities of partly masticated hay is found around hay racks. Many of the animals are constantly rinsing their mouths with cold water. Temperature elevated one to one and one-half degrees, cough when food or water touches the pharynx. Submaxillary lymphatics swollen and sensitive.

On opening the mouth the mucous membrane is very much reddened and sensitive in about twelve hours vesicules or blebs may be seen on the dorsal surface of the tongue; these vary in size from a five-cent piece up to a fifty-cent piece, are a grayish yellow in color; there is considerable saliva in the mouth. In another twelve to twenty hours these vesicules rupture, leaving a red, raw, angry ulcerated patch of tongue denude of mucous membrane. At this stage the animal is very gaunt, saliva hangs from lips like lace. If no complication develops, recovery usually takes place in about five to six days.

Treatment.—Isolation and rigid sanitary measures greatly reduce susceptibility. Feed very little hay, keep fresh, cool water before animals at all times, dry bran and oats seem most palatable.

Hyposulphite of soda in drinking water has a very beneficial affect. The best results have been obtained from the daily use of a solution of Potassium Permanganate and Alum 1:500 for four days. In cases where tongue has been paralyzed it has been found best to make a support or sling and keep the tongue in the mouth.

Bacteriological Investigation

The organism isolated in this condition is a micrococcus, which was obtained in pure culture by withdrawing under aseptic conditions the material from unruptured vesicals occurring chiefly on the tongue. Transfers of this exudate, a sero-turbid fluid was made into nutrient broth and upon glycerin agar. After incubating these tubes for five days a few very small dew-drop like colonies appeared on the glycerin agar slant. No growth could be detected in the bouillon, though they were incubated for some time and repeated tests were made upon them. Cultural media to which six per cent glycerin had been added favors the growth of this organism.

Morphology.—A large micrococcus varying from one and one-half microns in diameter. Its arrangement is generally in clumps. No chains have been observed. It stains uniformly and with all ordinary stains. It is gram positive.

Glycerin Agar Stroke.—Growth upon this medium is moderate, the line of inoculation taking on a beaded appearance, with small, convex, glistening translucent colonies. The incubation period is from 48 to 72 hours before the growth is visible.

Loffler's Blood Serum.—A peculiar feature of this organism is that upon this medium there is a very scant growth, parts of the surface losing their luster with no indication of raised or distinct colonies.

Glycerin Agar Stab.—The growth was best at the top, but was of a restricted character. The line of puncture was filiform. The organism produced no change in either plain or litmus milk. In carbohydrate media no fermentation was produced and no liquifaction in gelatin.

In the laboratory animals no effect was produced by injecting 25 minums of a heavy

suspension of the micrococcus in the peritoneal cavity of both a rabbit and a guinea pig.

The organism does not seem to be very hardy; for out of five cultures left alone for ten days only one had live organisms in it, at the end of that time.

A Mild Form of the Disease Produced.

After growing the organism for about three months, covering many generations, we tested the cultures on seven mules that had been in the hospital for about three months, owing to various forms of lameness. These animals were more or less in contact, but had not contracted the disease and were therefore considered immune to natural infection.

The cultures were washed off with normal salt solution and administered as follows:

1. Four mules had 2 c.c. each rubbed around the tongue and lips with negative results, four days after the experiment, but on the sixth day three of them had inflamed mouths and slight salivation.

2. One mule had 2 c.c. (or over four billion organisms) injected into the jugular vein with positive results in forty-eight hours. The veins and lymphatics under the tongue became corded and the mucous membrane of the mouth very much inflamed. Salivation was copious. Temperature was one degree above normal. This condition remained for two days, at present the mouth is becoming normal and the temperature has gone down today, (February 16.)

3. Two mules had 6 c.c. (or over twelve billion organisms) each, injected into the side of the tongue at three different places. After twenty-four hours there were pronounced nodules about the size of the top of one's finger at the seat of each injection. After forty-eight hours one of these nodules began to soften in one mule, forming a vesicle. At the end of the seventy-second hour this mule was salivating freely with acute inflammation of the mouth. In the other mule two of the nodules had undergone the same change, but the mouth was not inflamed at the end of the 72nd hour. We then proceeded to extract a little of the cloudy aqueous contents from the vesicles in each mule to examine for the organism. The result was gratifying from our standpoint, inasmuch as we were able to isolate the original organism in plentiful supply. The work is proceeding and further experiments will be set up.

Second Experiment

March 1st. The organisms isolated from the inoculated animals were injected into the tongues of two mules, with negative results.

The original cultures were used on two horses and three mules as follows:

1. A seven-year-old bay gelding had four cc.'s of a heavy suspension injected per jugular with negative result.

2. A nine-year-old black gelding had four cc.'s injected under the tongue; result was mild inflammation of the mouth on the third day, which disappeared rapidly.

3. A black mule gelding had four cc.'s intravenously with negative result.

4. A black mule had four cc.'s injected into the tongue, results were mild inflammation of the mouth on the third and fourth day.

5. A grey mule gelding had four cc.'s injected into the tongue. Animal showed active inflammation of the mouth with salivation on the fourth and fifth day.

Note: At time of writing the disease has disappeared entirely from our pens and hospitals—in fact, it went out as suddenly as it came in. Attenuation may have accounted in part for the mild form of the disease we were able to produce, and perhaps in part to the fact that the animals used in the experiments were either immune or partly so. We had no method of finding out whether the subjects we used had the disease before they came our length, but we did know that they all had been more or less in contact with it.

We were unable to get any other kind of subjects.

Further Studies on Hog Cholera with Reference to Spirochaeta Hyos

By Walter E. King and R. H. Drake, Detroit, Mich.

This paper, from the research laboratory, Parke, Davis & Co., which was read at the A. V. M. A. meeting at Detroit in 1916, reports additional data and gives a general summary of the investigation regarding Spirochaeta Hyos, an organism present in certain hog cholera lesions. The authors state that the organism is found in animals infected with hog cholera and has certain characters suggestive of its pathogenic nature, and that only one important step remains to prove with certainty whether or not it has any direct etiological relation to hog cholera; namely, some means must be developed to isolate the organism in pure culture directly from the infected animal and these pure cultures utilized in animal inoculation experiments. Until such experiments can be carried out, positive conclusions must be withheld.

Sterility in Cows and Its Treatment*

By CHARLES E. COTTON, Minneapolis, Minn.

VETERINARIANS, particularly in dairy and beef breeding districts, should make a thorough study of abortion disease, as it has become a serious economic problem to the cattle industry of the whole country. In my section of the country the progressive owners of breeding and dairy cattle have made a study of the disease and of the resulting sterility. When consulting with them in regard to their herds and on advising them to employ a qualified veterinarian in their community to make an examination of their cattle, and treat them, they inform us that their local veterinarian knows nothing about it and seems to take no interest in it. This condition of affairs does not tend to place the practitioner in a very good light in his community and it certainly does not enhance his material income. One practitioner in our state has increased his monthly business in the past few months to the extent of three hundred dollars by making a study of the pathology of the abortion disease and the resulting sterility.

A Sterility Inventory Practical and Profitable

If one has a knowledge of the pathological changes resulting from abortion disease and the secondary infection associated with it, which produce sterility, he can examine a herd of cattle and inform the owner which animals have become permanently sterile and can treat those which might possibly recover and become breeders again. In this way his knowledge is of great economic value to the owner as there is no return from an animal that is permanently sterile and she should be sent to the slaughter.

Oftentimes it is only necessary to dislodge a retained corpus luteum in an ovary and the animal becomes a profitable one and can be placed on the right side of the ledger as an income producer. It may be necessary to give weekly treatments to those animals with chronic endo-metritis or pyometra. In such cases Williams states that he succeeds in getting about sixty per cent to again become breeders. Reinhardt claims to get as high as eighty per cent pregnant.

I do not wish to commit myself at this time on the results of my own work. Six months hence I hope to be able to present some valuable practical data. I have been working in a few herds for a little over seven months. Some eight weeks ago I was very enthusiastic about my results. In fact, almost all the animals I was treating had, as I thought, conceived and some of them had gone by four periods. Since that time a number of these have come in estrum again and are showing some slight symptoms of endo-metritis.

Technic of Examination for Sterility

Before undertaking to take up the conditions which produce sterility, I will try to explain the practical procedure necessary in examination of the genital organs in order to make a diagnosis of the pathological condition which produces the sterility. It is always best for a beginner who lacks confidence in himself to grasp the cervix with the long Albrechtsen forceps and put enough tension on it to fix the uterus well back on floor of pelvis. Even though the animal is pregnant you can do no harm by this procedure. Introduce the hand carefully into the rectum. If it is full of feces, a little tension with the fingers of two hands on sides of anus causes the sphincter muscles to relax and the air entering the rectum will reflexly cause the animal to defecate.

The finger nails should be trimmed, as the mucous membrane of rectum can very easily be lacerated. Some operators use lubricants on the hands, but personally, I feel that they interfere with my sense of touch and the manipulations. The hand should be passed slowly through the rectum into the small colon which has a thinner wall than the rectum and renders it easier to palpate the genital organs. The hand, carrying the colon with it, can then be brought back into the pelvis where you can easily feel the uterus lying just below the rectum and on the floor of the pelvis.

The normal, non-pregnant uterus is soft and pliable and small enough that it can be covered with palm of hand or gathered up in the hand. One can easily feel the bifurcation of the horns and then follow each horn which extends downward and forward, then backward to the oviduct or fallopian tube, which when normal cannot be detected by palpation, and the ovary which lies close to the body of the uterus, a short distance from the median line. The ovaries can in this way be located and gathered en-

*Presented at the Missouri Valley Veterinary Assn. meeting, St. Joseph, Mo., Feb. 14, 1917.

tirely in the hand and slight pressure can be put upon them without injury to the wall of the rectum. Frequently, however, in cases of endo-metritis or pyometra we find the ovary contains a deep seated, degenerated or cystic corpus luteum or yellow body which is covered by epithelium and it requires a great deal of pressure to dislodge it and it should not be attempted through the wall of the bowel but the ovary should be carried by means of the hand in the rectum to the other hand in the vagina and then the operation can be performed without any danger to the animal, as the wall of the vagina is thicker and will stand a great deal more pressure and bruising than the wall of colon or rectum.

The normal ovary is ovoid in shape and varies in size from one to one and one-half inches in length and from one-half to one-inch in thickness. The surface of ovary is smooth and often appears lobulated by the presence of corpora lutea. The true corpus luteum may reach a diameter of one to two centimeters, is circular in outline and deeply imbedded in the ovary so that, although it projects from the surface, it is more a part of the ovary than the cysts which we meet with in diseased ovaries.

Causes of Sterility

Sterility may be due to various causes, such as high feeding for special purposes, especially when put on protein rations, keeping cow from bull for a long period in order to make high butter fat record, excessive fatness, lack of exercise and debilitating diseases. The removal of these causes will often correct the sterility.

Deformities of the genital organs, such as faulty development or lack of development of the ovaries, tubes, uterus, cervix or vagina are common. These conditions, as a rule, cannot be corrected and the quicker the animal is sent to the slaughter the better. Abnormalities such as cysts, tumors of vagina and uterus, atresia of vagina from persistent hymen may produce sterility. The sterility resulting from abortion disease is the most common and in the majority of our herds we have cattle which are sterile because of this disease.

Abortion and Granular Vaginitis Factors

Abortion disease produces sterility by causing disease of the ovaries, oviducts or fallopian tubes, uterus and cervix, and vagina. Contagious granular venereal disease, which Williams says is closely associated with and has "a vital relation to contagious abortion," is also another cause of sterility. Ostertag says that the cause of this disease is a streptococcus, while Meyer, as a result of his late work, claims that the abortion bacillus is the causative organism. This disease is very common in the bull. It is transmitted by coition and also by contact with diseased animals and contaminated bedding. The symptoms are slight swelling of vulva, diffuse spotted appearance of mucous membrane of vagina and a muco-purulent secretion collection on surface. In a short time small nodules, the size of a millet seed and dark red in color appear on the mucous membrane of the vagina. Discharge becomes more profuse. It is a chronic affection and may last for months. The treatment of this disease consists in cleanliness and disinfection of stables, and local treatment of the vagina of the female and the prepuce of the bulls.

Treatment of Granular Vaginitis

The local treatment consists in daily washing of the external genitals with antiseptic solutions and the irrigation of the vagina with a mild antiseptic, preferably a one-half of one per cent Lugol's solution or a two to three per cent solution of therapogen. As the condition improves irrigate less frequently. Do not breed until the discharge ceases.

The mucous membrane of vagina is very sensitive and I have learned by experience that it will not stand as strong solution as that of the uterus. Prepuce of bulls should always be flushed before and after copulation, with a mild antiseptic.

Three Diseases Involve the Ovaries

The diseases of ovaries produced by the abortion disease and the secondary infection are:

1. Acute and chronic inflammation, atrophy, sclerosis.
2. Cysts.
3. Retained, degenerated and cystic corpora lutea which are usually deeply imbedded in ovary and covered with epithelium.

Inflammation, Atrophy and Sclerosis of the Ovary

1. Acute and chronic inflammation, atrophy and sclerosis of ovaries may result in sterility, but if the animal has regular or irregular heat periods it may be possible, with treatment, to get them pregnant. The diagnosis can be made only by the size and consistency of the ovary. Sclerosis can usually be diagnosed by the enlargement of the ovary into a hard, fibrous, nearly rounded body with a smoother surface than the normal ovary.

One ovary may be atrophied or sclerotic and the other one practically normal. Some authorities claim that when this condition is present and animal does not come in heat, we cannot expect the normal ovary to functionate until the diseased one has been removed. Others claim that by manipulation of the ovaries and the treatment of the

endo-metritis associated with this condition, we may succeed in getting the animal to conceive. I am now treating two such cases and hope to get good results.

Ovarian Cysts

2. Cysts of the ovaries occur in the follicles of the ovary as well as in the corpus luteum, but the latter are the most common. Cystic ovaries, in certain stages, cause absence of heat but in a great many cases when associated with endo-metritis or pyometra and inflammation of the tubes, they produce a nymphomania. The symptoms are increase or irregularity in heat and frequently animals are constantly in heat In cases of long standing animals show a relaxation of the sacro-sciatic ligaments, giving the spine a humped up appearance in front of the base of tail. There is also a relaxation of the vulva and vagina and oftentimes a prolapse of the vagina. The animal becomes run down, milk flow ceases and frequently the bones become brittle and fractures of pelvis are not uncommon. The treatment consists in pressing out the cysts weekly, at the same time treating the diseased uterus until it is normal. If cases are not of too long standing and the oviducts are normal the majority of them can be made to breed again.

Treatment for Cystic Ovaries

The operation of rupturing the cysts is performed through the rectum and bowel. The ovary is grasped in the whole hand and pressed. One can easily tell when he has succeeded in rupturing the cyst, as the ovary collapses. Moderate pressure, as a rule, is all that is necessary but some times the cysts are imbedded in the center of ovary or old cysts may be surrounded by inflammatory tissue, when it is necessary to perform the operation through the vagina as before described. If you are not successful in thus rupturing the cyst it can be emptied by means of a small trocar through the wall of vagina after fixing the ovary by one hand in the rectum. The operation is without danger if the ovary is afterwards kept under pressure with the hand for a few minutes to control hemorrhage. The cysts will recur in a few days to two weeks, but are easily ruptured through the rectum. This should be done weekly until they cease to form and when the uterus is normal the animal can be bred again.

I cannot too strongly warn you never to massage or put any pressure on the ovaries until you determine that the animal is not pregnant, as frequently pregnant animals may show heat and will take the bull at any time during the period of pregnancy and if the corpus luteum of pregnancy should be dislodged, abortion would result in ten to fourteen days.

Abnormal Corpora Lutea

3. Retained or persistent degenerated and cystic corpora lutea or yellow bodies are present in one or both of the ovaries of practically all cases of pyometra or in cases where a portion of the afterbirth is retained in the uterus as a result of the inflammation and infection which extends to the ovaries. They are usually deeply imbedded in the ovary and covered with epithelium. In a few cases the symptoms are only those of absence of estrum or heat and the presence of the corpus luteum can easily be felt in one or both ovaries.

Dislodgment of Diseased Corpora Lutea

If there is no endo-metritis or pyometra and merely the retained corpus luteum, all that is necessary is its dislodgement and heat will result in ten to fourteen days. Williams says he often finds a diseased corpus luteum and the corpus luteum of pregnancy in the same ovary. One must be sure the animal is not pregnant as such treatment would then produce abortion. It is easy to distinguish between the corpus luteum of pregnancy and the diseased degenerated corpus luteum by the fact that the latter is larger and more deeply imbedded in the ovary and the ovary is, as a rule, much larger. The corpus luteum of pregnancy generally protrudes more from the surface of the ovary, is not covered with epithelium and is easily dislodged.

In dislodging the diseased corpus luteum it is always advisable to operate through the vagina and in some cases it may be necessary to have an assistant with a strong grip to dislodge it. I have had two cases in my experience in which I was unable to dislodge it and was compelled to hand it to an assistant whom I had place his hand in the vagina and I would then hand the ovary to him with my left hand in the rectum. It is very easy to know when you have succeeded in dislodging it as it drops into your hand and is quite consistent, while the ovary collapses. One should always hold the ovary under pressure for a few minutes or the operation might result in a fatal hemorrhage. In cases of pyometra one cannot expect any success from treatment if the retained diseased corpus luteum is not dislodged.

Disease of the Oviducts

Inflammation of the oviducts or salpingitis, may be catarrhal, purulent, edematous or dropsical, and frequently they become cystic and very much enlarged. I had one case that was examined by Dr. Williams, in which the oviducts of both ovaries were cystic and dropsical and that of the right side made two convolutions practically enveloping the ovary. These conditions can

be diagnosed by palpation through the rectum but treatment is impossible because of inability to get at them. An animal with diseased oviducts should be sent to slaughter as she could not possibly breed.

Diseases of the Uterus, Cervix and Vagina

In the majority of cases of sterility due to abortion disease we will find an endometritis or a chronic inflammation in the walls of uterus and cervix, or a pyometra or pus in the body of uterus or one or both horns. Both of these conditions are usually accompanied by inflammation of the vagina and ovaries as before described. The cause of these conditions is undoubtedly primarily due to the bacillus abortus followed by a secondary infection or a mixed infection. Williams claims that the bacillus abortus is the cause and remains in the uterus permanently unless destroyed by frequent flushings with mild astringent or antiseptic for a period of five to six weeks or until all discharges have ceased. Sven Wall claims that the endo-metritis caused by the abortion bacillus "seems not to occur or is rare." He states that the secondary infections are of a more serious nature than the abortion infection, and "they sometimes end fatally by septic and putrid intoxication or by bacteremia; sometimes they lead to a chronic metritis or a pyometra, which heals more or less slowly and often leaves an atrophy and sclerosis of the mucous membrane of uterus and the wall of uterus may be thickened."

B. Abortus Dies In Non-gravid Uterus

Schroeder and Cotton state that the bacillus abortus does not live in the non-gravid or non-pregnant uterus and that the discharge from the uterus of a cow which has aborted may contain the bacilli for twenty to fifty days, but they eventually disappear. They believe that the "abundance and period of the persistence of the bacilli are intimately related to the magnitude of the lesions in the uterus attendant upon an abortion." I am not in a position to decide which one of these gentlemen is right in his deductions. I do know, however, that we have a stubborn, chronic inflammation which may be purulent, of the mucous membrane and muscle walls of the uterus and that we have a difficult task on our hands, and we must be faithful, patient and thorough in our treatment of same, if we hope to obtain good results.

Pyometra Easily Recognized

The diagnosis of endo-metritis or pyometra can be made by ascertaining the size of the uterus by palpation per rectum. In endo-metritis the uterus is enlarged, the walls are thick and heavy, the cervix may be thickened and the membranes inflamed, and there may be a discharge from the uterus and vagina which is mucous or mucopurulent in character.

In bad cases of pyometra in which the cervix is contracted and the walls of uterus are flaccid, the body of the uterus does not lie in pelvis but is abdominal in position. The uterus is bladder like in shape and weighed down by the contained pus which may or may not discharge periodically in small amounts.

The pregnant uterus can be distinguished from pyometra by the fact that it is chiefly elongated and broadened, not bladderlike in shape, but flattened from above to below and the prominent parts of the fetus can usually be felt through the walls after it is eight weeks old. If there is intermittent discharge from the uterus there is no pregnancy. If the animal is pregnant one can feel the corpus luteum or normal yellow body of pregnancy in one of the ovaries. Dr. Williams has described the uterine seal that is always present in pregnancy and completely closes the cervix. It is gelatinous in character, sticky, and can be differentiated from the slimy, mucous or muco-purulent discharge which adheres to the mucous membrane of cervix in cases of endo-metritis or pyometra.

Treatment of Pyometra

The treatment of endo-metritis or pyometra consists in dislodging the retained degenerated or cystic corpus luteum and rupturing of cysts of the ovaries which are practically always associated with this condition, the removal of the abnormal contents of the uterus by irrigation and massage. This should be done faithfully once a week for a period of five to six weeks and often months or until the discharge has ceased or at least contains no pus, then it is safe to breed.

Williams-Albrechtsen Method of Treatment

The method of Williams and Albrechtsen is the one I will describe.

The instruments necessary are the two forceps, to grasp the cervix and pull the uterus well back into the pelvis, the dilator which is used to enter the cervix, the metal "return flow" catheters, and two vessels with rubber hose attached which is of proper size to fit the metal catheters. Two fountain syringes will answer but the vessels are more substantial. It is also well to have a common rubber hose catheter as it is often necessary, in cases of pyometra to introduce a tube into one or both horns in order to flush them well and it is much easier to massage and siphon out the fluid by means of the rubber catheter.

The animal is confined in the standing position, the external genitals cleansed with

a mild antiseptic, and the instruments placed in a pail containing a weak solution of a mild antiseptic. It is well to have another pail containing warm water in order to keep the hands free from feces. The hands and instruments being sterilized, enter the vagina, grasp the cervix with the long forceps and pull it back as far as possible and place the other forcep on the other side of the cervix. In the majority of dairy cows, one can then pull the uterus back eight or ten inches, or far enough into the pelvis that he may be able to see the cervix, and can then carefully enter the cervix, which is about three inches long, with the dilator. This should be done very delicately and carefully, turning the dilator as it enters if it meets with obstruction from the folds of mucous membrane. The point should be held downwards in entering the uterus. Very little force should be used as it is very easy to lacerate the membranes and open up a source of deep seated reinfection which may possibly result seriously. In these cases there is no such thing as a closed cervix. Any cow which menstruated or has a discharge from the uterus has an open cervical canal. In my seven months' work since I have been using these instruments, I have not yet found an animal whose uterus I could not enter through the cervical canal although in some few cases I have spent an hour introducing the dilator. After the dilator has passed through the cervix it can be dilated, the small metal catheter can be introduced or perhaps the soft rubber catheter, and the uterus flushed until all foreign material escapes. In some cases it is necessary to massage the uterus by means of the hand in rectum in order to remove all the material. Williams flushes the uterus first with a two per cent Lugol's solution and then with normal salt solution. Both of these solutions should be siphoned out.

If the cervix is enlarged, and the mucous membrane swollen and inflamed it is well to swab it with pure Lugol's solution or with tincture of iodin.

This treatment should be repeated once a week until conditions are normal.

Quarantine After Abortion and Premature Delivery

In a herd of cattle when infectious abortion is prevalent all aborting cows, all those who give birth prematurely and those with retained placenta should be removed to a quarantine in separate stables and should not be bred back for a period of two months or until the uterus has regained its normal condition. Treatment of these animals should be faithfully carried out and in a large percentage of cases sterility can be prevented and the animals will continue to be useful and productive. Fetal membranes should be removed as soon as possible if it can be done without force. The uterus should then be douched with a mild antiseptic and the fluid carefully drawn off.

Williams recommends the introduction of iodoform in one half ounce quantities in capsule or in suspension in olive oil in cases where the fetal membranes are retained. This dissolves slowly, does not irritate the uterus and prevents decomposition and the extension of the infecting process. The uterus should be douched frequently with a mild antiseptic solution until all discharge has ceased. If a chronic endo-metritis or a pyometra results; it should then be douched weekly with Lugol's solution and normal salt solution until normal, then animal should be bred.

The cystic degeneration of the corpora lutea is always associated with chronic endo-metritis and by dislodging the diseased corpus luteum and disinfecting repeatedly very satisfactory results can be obtained.

Never, under any conditions, give a stomach tube or catheter to a herdsman or owner with the advice to continue the flushing of the uterine cavity, for sooner or later there will be disastrous results.

Following the presentation of his paper Dr. Cotton proceeded to demonstrate his method of examining a cow in cases of sterility.

Demonstration of treatment of sterility in a cow, by Dr. C. E. Cotton.

DR. COTTON: I am going to undertake to demonstrate the practical use of these instruments in the treatment of sterility, the condition which follows abortion disease. I will try to fix the uterus and introduce the dilator. It is very easy after you get your forceps on the cervix to pull the uterus back. There are instances in which we have adhesions of the fallopian tubes as a result of disease. I have had a good deal of experience where I could not succeed in pulling the uterus back. As a rule we get this in old dairy cows, and we may have some trouble in pulling the cervix back. You will be surprised at the difference in character of cervixes that you find, particularly in these old pyometra cases, in which they look something like a mushroom. I want you to remember that the cervix is at least three inches long. In the old days we used to say we had to open the cervix, and we would go there trying to use our finger and open it up, which is impossible.

Particularly in old Holstein cattle, is there no trouble about pulling the cervix out. There is something like Dr. Williams' uterine seal here that I spoke of yesterday. This is the cervix. Now as a rule before

going on to do anything with the uterus, we put the forceps on the uterus pulling the cervix down, which is always necessary before proceeding to go into the uterus. In this case while I have the forceps on, I want to introduce this dilator if I can. It may be possible that this cow is pregnant and that is the uterine seal.

One of the mistakes I made in undertaking to treat an animal and open up the cervix was that I produced a beautiful abortion and I did not know enough to dislodge the yellow body of pregnancy, so it became a very rotten mess. Dr. Williams followed me, and the cow was a very valuable animal, worth probably $5,000 or $6,000, but he saved my neck. He said the animal was subject to abortion and it was simply a question of time until she would have aborted and that I simply hurried the disaster. This uterus is abdominal. The animal is pregnant. That typical jelly you see there is Williams' uterine seal.

DR. HUGHES: Would it be possible to say as to the state of pregnancy of this case, that is, if it were a case involving a law suit or something of that sort?

DR. COTTON: I do not think it would for me, but I think it would be for Dr. Williams or others better versed in this branch.

DR. HUGHES: The reason I asked that question is this. A little while ago, probably two months ago, there were a number of famous cows that met in competition at a dairy show. One of the essentials was that the animals in competition should be breeders. Eventually the first prize was given to a cow, and the second man protested this cow, claiming that she was not a breeder. The owner of the cow insisted that she was and had been bred about ten weeks before. The man who protested the cow insisted that she should be examined and an actual determination of the presence of the fetus made. I was called on the scene to determine the matter, and I need hardly tell you that I felt I should like to dodge the issue. The consequence was I wandered out of the building and made myself scarce for an hour or so, during which time I gave these men time to debate and fight it out. Finally there were calls for me and they brought me back, and I told these men that it is not possible to determine this condition. One of the men said he withdrew his objections and they finally came to an agreement. I do not believe I could determine a fetus in that cow at ten weeks. The fetus at six weeks is about one and one-half inches long, may be less. The fetus at ten weeks, I do not believe, would be more than two and one-half inches long, and I do not believe it would be an inch in its greatest thickness, and we cannot reach it. Consequently, realizing that I was very pleased to be relieved of [illegible] examination and determination of pregnancy [illegible] at cow.

DR. [illegible] Many years ago when cattle were cheap in this country, we spayed a number of cows. We spayed them through the vagina, and it was important in these cases to determine whether or not pregnancy existed because abortion after vaginal spaying is not always followed by good results, so I tried to determine how I could best settle this question. I found the most reliable method was to test the weight of the uterus. The uterus when not gravid is light. As Dr. Cotton says, you can grasp it in your hand, but when it begins to enlarge only a little, it becomes heavy, even though the fetus is very small. The fluid in the sac makes considerable weight, and that weight tends to pull it over into the abdominal cavity. Now you know that the os uteri projects into the vagina, and if you will just practice grasping the os, pulling it into the vagina and doubling the uterus up a little, you will soon be able to tell if there is weight in it. I never made a mistake when I used that method of testing pregnancy.

DR. COTTON: I cannot agree with that statement. There is no question in my mind but that in pyometra the same condition exists so far as the uterus is concerned. I wish to state that this animal was so well advanced in pregnancy that I could not get hold of the uterus, and I have seen half a dozen abortions produced by myself and others that were six weeks, eight weeks or ten weeks old.

I am sorry we could not get any practical results here with this cow. As I stated, the breeders of this country are making a study of this, and the veterinary profession is backing up, and if we do not go into it, we are going to be condemned. If you get started in the work and see some of the results you will be astonished. Of course, you are going to have failures, but if you are particularly careful in introducing your dilator, you will not have to be afraid of abortion. There is no doubt, however, but that I would have caused an abortion in this cow if I had taken hold of the ovaries. I want to repeat again what I said in my paper about the yellow body of pregnancy in differentiating between that and the degenerated corpus luteum which exists in this disease. It is hard to tell, but the yellow body of pregnancy is near the surface, is easily dislodged, whereas the diseased cystic body is more deeply seated and is generally larger.

DR. BEMIS: I just like to say a few words agreeing with Dr. Cotton in what he says. I have had an opportunity to follow up this

(*Continued on page 267*)

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An Appeal to the Veterinary Profession

Office of the President of the American Veterinary Medical Association

TO the members of the American Veterinary Medical Association and the veterinary profession:—In view of present conditions and the possibility that our country may be forced into the awful world war, as a profession, we must show our loyalty and do our part in preparedness.

After consultation with the executive board and other members of the association, I have asked Dr. C. J. Marshall, of Pennsylvania, to act as chairman of a special committee on "Army Veterinary Service," and requested him to name the other members of the committee. He has named as his associates, Veranus A. Moore, J. P. Turner, F. A. Bolser and Secretary L. A. Merillat.

Dr. Marshall spent last summer in England and France, studying the organization of the veterinary corps in the Allied armies and is familiar with modern army veterinary organization. Congress has at last recognized our profession, and the medical corps of the army is now organizing the veterinary branch. The committee can be of assistance in such re-organization.

If our country is drawn into this war, many more veterinarians will be required in the regular organization and it will be necessary to have a large reserve corps. The medical profession has started the organization of a reserve corps and I am sure our profession will show as much loyalty and patriotism. Dr. Robert Vans Agnew, of the 5th Cavalry, some time ago succeeded in getting a number of veterinarians to volunteer their services in case of war. With the army veterinarians and all members of our profession working in harmony, we will succeed in getting something tangible which will be of material service to the committee and the medical corps in the organization of a reserve corps, whose duties in case of war, would consist of the inspection of meat, hay, grain, horses and mules, and the usual veterinary work at hospitals located at the base and mobile depots behind and along the battle lines.

I appeal to all eligible men in the profession, who are so situated that they can volunteer their services to our country in case of need, to immediately send their names to the chairman of this committee, Dr. C. J. Marshall, 39th and Woodland Ave., Philadelphia, Pennsylvania.

Charles E. Cotton,
President.

The Veterinarian's Vacation

PRACTICALLY all business and professional men lay off from their vocations and play a while sometime during the year. The unanimity of opinion favoring such practices may be taken as conclusive proof of the need of a vacation. Veterinarians employed in the federal service, in school work and in commercial lines, look upon annual vacations as necessary and desirable and a part of their just dues. Practitioners are certainly as deserving in this respect as any other class.

It being settled then that the practitioner will take a vacation, the question arises, what form his recreation shall take? What is the best sort of vacation, the one that returns the largest dividends in improved health, in increased ability and in pure enjoyment?

Tell us your experience. We want to publish a diversity of opinions on this subject next month, and perhaps the month following. It is none too soon to begin your plans for next summer.

Dr. Jensen of Kansas City would have the A. V. M. A. hold its annual meetings at noted summer resorts. He prefers Estes Park, Colorado, for the first one, and he would have us make our trip to the A. V. M. A. meeting and attendance there our vacation. Others look upon attendance at the A. V. M. A. meetings as a serious business and would not want a vacation spoiled thus with their thoughts on their work all the while.

Some insist that an automobile tour with the family along, is the only right way to have a worth-while vacation. Others say that an automobile reminds them of work. When they take a vacation they want someone else to do the driving and prefer a member of the Brotherhood of Locomotive Engineers.

What has been readers' experiences, what vacations have been pleasant and profitable, what ones have been disappointments. Advise what not to do as well as what to do. And don't forget to state the cost, for that is an item to be considered. Now, don't put it off. The return of mail is none too soon for this information.

EXECUTIVE BOARD A. V. M. A.

The ballot for the election of members of the executive board of the A. V. M. A. resulted as follows:

First district—Dr. F. Torrance, Veterinary Director General, Dominion of Canada.

Second district—Dr. W. Horace Hoskins, Dean of the New York State Veterinary College, New York, N. Y.

Third district—Dr. John R. Mohler, Assistant Chief, Bureau of Animal Industry, Washington, D. C.

Fourth district—Dr. C. H. Stange, Dean of the School of Veterinary Medicine, Iowa State College, Ames, Ia.

Fifth district—Dr. R. A. Archibald, President, Western Laboratories, Oakland, Cal.

Dr. V. A. Moore, Director of the New York State Veterinary College, Ithaca, N. Y., is member at large by appointment. Dr. Moore will hold this position until the meeting of the A. V. M. A., at Kansas City, next August, when a member at large will be chosen for a term of five years.

BULLETINS EVERY VETERINARIAN SHOULD HAVE

Report of the Alaska Agricultural Experiment Stations, 1915

By C. C. Georgeson, Agronomist in Charge, U. S. Department of Agriculture, Washington, D. C.

This covers the work for four stations in Alaska during the year. Among the things of special interest to veterinarians contained in the report may be mentioned that hogs in that region are attacked by what appears to be rheumatism; they become lame, cannot get up and have to be fed by hand. It is further stated there is need for a hardy type of cattle for the interior, and the suggestion is made that a cross between the yak and common cattle might produce a breed that could withstand the extreme cold. Sheep do well on the native pastures, but have suffered by depredations of the brown bear. No horses are bred in Alaska, but have been imported at a high cost for freight. It is stated that no doubt the breeding of horses would

succeed the same as the breeding of cattle and sheep.

Feeding and Management of Dairy Calves and Young Dairy Stock

By W. K. Brainerd and H. P. Davis, Washington, D. C.

Farmers' Bulletin 777, Bureau of Animal Industry, U. S. Department of Agriculture. This bulletin discusses the care of calves from birth until two years of age, or rather it starts with their care before they are born, stating that poorly nourished cows give birth to weak, puny calves which are hard to raise, and the feeding of the calf, therefore, begins before it is born. Emphasis is placed upon cleanliness of surroundings and feeding utensils, since to a large extent, calf diseases are the result of filth and carelessness. In the case of white scours, as this disease is of so serious a character, the advice is given that any outbreak should be referred to the state live stock official or to a qualified local veterinarian.

How to Select a Sound Horse

By H. H. Reese, Washington, D. C.

Farmers' Bulletin 779, Bureau of Animal Industry, U. S. Department of Agriculture. The importance of making a thorough examination of the horse is pointed out, and detailed instructions given for observing blemishes, vices, faulty conformation, unsoundness and general characteristics. Thirty-six illustrations appear in the bulletin showing various defects and points to be given special attention in the selection of horses.

Tuberculosis of Hogs

By John R. Mohler and Henry Washburn, Washington, D. C.

Farmers' Bulletin 781, U. S. Department of Agriculture. This bulletin contains information as to the nature and prevalence of hog tuberculosis and how to prevent and get rid of it. Methods of infection, symptoms, the tuberculin test, lesions, and preventive measures, are thoroughly discussed. Veterinarians are urged to educate their clients as to the proper method of preventing this disease, since to explain to the hog raiser by word of mouth the methods to be followed is held to be the most satisfactory way in which to spread information and make it effective.

Anthrax or Charbon

By Henry J. Washburn, Washington, D. C.

Farmers' Bulletin 784, U. S. Department of Agriculture. The description, history, cause, symptoms, susceptibility of various animals, distribution, diagnosis, antomical changes, treatment, and preventive measures relating to anthrax, are given in this pamphlet. The most effective method of dealing with the disease is held to be by prevention. Medicinal treatment, it is stated, is usually of no avail in acute cases. Antianthrax serum is recommended when the progress of the disease is not too rapid, but it is said that at present this serum is not readily obtainable.

Contagious Abortion of Cattle

By Adolph Eichhorn and George M. Potter, Washington, D. C.

Farmers' Bulletin 790, Bureau of Animal Industry, U. S. Department of Agriculture. The authors of this bulletin state that while tuberculosis is now thought to stand first among animal diseases in point of economic loss, contagious abortion, if it continues to increase, will soon exceed the former plague in the amount of damage inflicted. The extent, nature, symptoms, spread, diagnosis, prevention and treatment of the disease are set forth. The three lines of treatment to be employed in combating abortion are outlined as herd management, including control of breeding, disinfection of premises, and treatment of the individual animal. These measures are discussed in detail.

Intradermal Test for Bacterium Pullorum Infection in Fowls

By Archibald R. Ward and Bernard A. Gallagher, Washington, D. C.

Professional Paper, Bulletin 517, U. S. Department of Agriculture. This is a report on a study of a disease of fowls that is quite destructive, especially among young chicks, where the mortality in some cases amounts to almost 100 per cent of the hatch and practically prevents the rearing of chicks in infected flocks. This disease appears as white diarrhea in chicks, but according to these investigators, it is the pullorum infection in the hen that is primarily responsible for the outbreak. Birds that recover may carry the causative bacterium in the ovary and thus serve as a source of infection in the future. The agglutination test was used to diagnose the disease in hens, where it is not betrayed by external symptoms, but the inconvenience of employing this method determined the writers to prepare a biological product from Bacterium pullorum which could be used in diagnosis. After numerous experiments it was found that a killed culture of the bacterium grown for about a month and held for several weeks before use, without further treatment other than carbolizing, gave the best results. An edematous swelling resulting from the injection of this product into the wattle of a fowl, when observed at a proper time interval, is an indication of the presence of infection of B. pullorum.

Goose Raising

By Harry M. Lamon and Alfred R. Lee, Washington, D. C.

Farmers' Bulletin 767, U. S. Department of Agriculture. The authors of this bulletin state that geese can be raised in small numbers successfully and profitably on farms where there is low, rough pasture land with a natural supply of water. The different breeds admitted to the American standard are described, and brief discussions are given of breeding, housing, selecting, mating, incubation, feeding and preparing for market. A summary of the reports from 300 breeders of geese in different parts of the country, is also included.

Immunity Studies on Anthrax Serum

By A. Eichhorn, W. N. Berg and R. A. Kelser, Washington, D. C.

Reprint from the *Journal of Agricultural Research.* The authors of this brochure set forth their experiments with anthrax serum fractioned by the methods used in the preparation of diphtheria antitoxin. It was found that the anthrax antibodies were associated with the pseudoglobulin fraction, and the globulin preparation contained the antibodies in a concentrated form, as determined in numerous tests. The conclusion is made that the globulin preparation is probably superior to the serum in the treatment of anthrax in man, since the dose is smaller and may be safely given intravenously. The writers state further that work on the standardization of anthrax serum by complement fixation points to the possibility of a more accurate means of standardization, although it is still in an experimental stage.

Diagnosis of Tuberculosis by Complement Fixation, with Special Reference to Bovine Tuberculosis

By A. Eichhorn and A. Blumberg, Washington, D. C.

(Reprint from the *Journal of Agricultural Research.*) After a brief historical resumé of the various efforts to utilize the complement fixation test in the diagnosis of tuberculosis, the authors describe their own experimental work in this connection, and arrive at the conclusion that the complement-fixation test is not so reliable as the subcutaneous tuberculin test for the diagnosis of tuberculosis in cattle. However, they state that the complement-fixation test might be employed as a supplementary test in cases of doubtful or atypical reactions to the subcutaneous or other allergic tests, although it is not practical for general diagnostic purposes.

Temperature Experiments in Incubation

By A. G. Philips, Lafayette, Ind.

Bulletin 195, Purdue University. This describes an experiment to find out the influence of different temperatures in the incubator. The conclusions reached are that the recommendations of some of the incubator companies show a tendency towards temperatures higher than they should be. A temperature of 101-102-103 degrees, the first, second and third weeks respectively, with a standing thermometer on a level with the top of the eggs but not touching them, is recommended as giving the most satisfactory results in artificial hatching.

Cost of Raising Leghorn Pullets

By A. G. Phillips, Lafayette, Ind.

Bulletin No. 196, Purdue University. This is an account of an experiment to determine the cost of rearing chicks. The chicks used were 999 White Leghorns, and it was found that raising the pullets from chickhood to laying age cost on a gross average $.434 each. This, less the profits in cockerels, made the net cost $.381 each. The percentage of pullets hatched from a given number of eggs, leads the author to conclude that if a poultryman desires 100 pullets, he should set 457 eggs.

Fattening Western Lambs

By J. H. Skinner and F. G. King, Lafayette, Indiana.

Bulletin No. 192, Purdue University. This shows the results of an experiment in feeding nine lots of lambs on various rations. The best ration from the standpoint of economical gains and profit seems to have been either one of shelled corn and alfalfa, or one of shelled corn, cottonseed meal, silage and clover hay. The addition of oat straw, molasses or ground soybeans to the ration did not prove satisfactory. Lambs fed in an open shed gained slightly more and at less cost than lambs fed in a barn.

Winter Steer Feeding

By J. H. Skinner and F. G. King, Lafayette, Indiana.

Bulletin No. 191, Purdue University. This bulletin details the results of an experiment in feeding seven lots of steers for 150 days on different rations. The most profitable ration seems to have been one of shelled corn, cottonseed meal, alfalfa hay and corn silage.

Therapeutic Suggestions for Lobelin Sulphate

By E. L. Quitman, Chicago, Illinois.

This is a reprint of an article that appeared in the January, 1917, number of the American Journal of Veterinary Medicine.

Practically Significant Facts About Abortion Disease.

By E. C. Schroeder and W. E. Cotton, Washington, D. C.

This is a reprint of an article that appeared in the February, 1917, number of the American Journal of Veterinary Medicine.

Department of Surgery

By L. A. MERILLAT, Chicago,
Professor of Surgery in the McKillip Veterinary College

Elongations of the Molars

(Continued from March number)

WHEN the fault arises from loss or decay of a mandibular molar the maxillary ones behave in the same manner, burrowing out the mandibular alveolus and bulging the jaw at the affected level, and not infrequently there is a fistulous tract at the border of the jaw. In fact the examination of horses in search of a cause for a fistula along the mandible often leads to the discovery of an elongated maxillary molar.

The so-called scissor-mouth of horses is a form of elongation of special interest. Here all of the molars are elongated by beveling instead of wearing evenly across the table. The maxillary molars bevel medially and the mandibular ones laterally, and always at some part of one of the arcades, a long protruding molar is found projecting into an opposite alveolar cavity which sometimes still contains the remnants of a badly decayed molar. The elongation by limiting the lateral sweeping motion of the jaw causes the teeth to bevel instead of wearing flat.

Congenital elongations are found associated with brachygnathism (parrot-mouth). By overlapping the mandibular molars the first maxillary premolar gradually elongates until it engages the diastema and sometimes, but not always, the opposite condition is found to exist at the posterior end of the arcades. Usually in parrot-mouth it is only the anterior end of the molar arcades that overlaps. This elongation is usually composed of about one-half of the tooth, seldom more.

Another form of congenital elongation is the one caused by supernumerary molars. A fourth (seventh) molar at the posterior end of either jaw not having a corresponding opponent will sooner or later protrude behind the third (sixth) and cause trouble by engaging the soft structures and later the bones. These particular protrusions are usually composed of the whole tooth.

Treatment of Elongated Molars.

It has been our practice for years (and we have yet found no reason to discontinue), to retard the development of elongations by cutting down the crown of the opposing tooth whenever we extract a molar. This not only retards elongation for years, but also serves to prevent impaction of the empty alveolar cavity with feed while it is healing. This measure is only contra-indicated in exceptionally young horses whose molars are yet sensitive in the crown area. In horses past seven years old the crown can be trimmed level with the gingival border without exposing the interior of the tooth to infection. In younger horses such a practice would hardly be prudent since the sensitive part would be exposed and cause pain and the pulp cavity might even be laid bare. It is, however, a perfectly safe practice when the horse has arrived at the age of seven years.

When an elongation has once developed it should be promptly trimmed down to the level of the arcade. We do not advise trimming them below the level because a molar that has not been in wear has a sensitive area extending much nearer its table than one in use. That is to say, if an elongation of an eight year old horse is trimmed very much below the table level its pulp cavity might be exposed. When the elongation is a supernumerary tooth that has never been influenced by attrition the sensitive area extends to the very table and is therefore likely to decay if trimmed too deeply. Alveolar periostitis indeed very often supervenes the trimming of such a molar at the posterior end of the arcade

where an accurate adjustment of a cutter to it is difficult on account of its inaccessible location. Generally the cutter drops too low upon the tooth because it is forced down by the narrowness of the space and the result too often is a painful inflammatory complication that incapacitates the horse for weeks and even causes alarm as to the outcome. Just how often this is due to a primary pulpitis and how often to a direct periostitis is of course not easy to determine. The fact, however, that this complication is due to trimming the tooth too low, in either event, is sufficient warning to exercise some care in performing this operation.

Elongated molars of aged horses should be extracted, as the feeble implantation is usually disturbed in the trimming process.

The operation of trimming off elongations calls for a strong, powerful cutter. The ordinary open molar cutters are worthless. For trimming the maxillary molars they too frequently prove entirely inadequate. Even when the power of two men is applied they will seldom trim off a protruding tooth promptly. And for the mandibular molars they are sometimes open too wide to cut these narrow teeth.

Strong lever cutters with handles heavy enough to prevent springing are needed for effective work of this kind. The operation is done much better on the operating table where the head can be held fixed while the cutters are being placed straight across the protruding tooth at the very level of the arcade. In the standing position such an operation, while done easily enough, is always a hit or miss affair, resulting in cutting them off too high, too low, or at an angle. And in view of the fact that there is often a tooth or part of a tooth to extract from the other jaw it is by no means a bad practice to place such cases under good enough restraint to do the work well. This operation, like other serious dental operations of horses, have unfortunately been too often handled as simple matters when, in fact, it is a serious undertaking, requiring skill and caution. Reiterating a point about animal dentistry mentioned in a previous chapter, a horse's mouth is a deep, dark cavern, so difficult to explore and invade, that good surgery can only be done under proper restraint.

Cattle, like horses, suffer also from horrible elongations, but in these animals they are found only by accident and where more than ordinary care is taken of them, as in the case of valuable subjects. With dentistry seldom thought of in this species, disorders of this character go on unnoticed until they have developed into an aggravated form, then on examination it is often found that much good might have been done had timely dental treatment been administered.

PITFALLS

No. 19. *Cocain toxicity.*—Those experienced in the use of cocain know of its tricky behavior at unexpected moments. It has generally been pronounced safe enough in horses because even very large doses may be given with no more serious effect than that of causing an annoying excitement. Fatalities are rare. Yet they do sometimes occur from what is ordinarily regarded as a safe dose.

The writer, in one case, saw a horse die suddenly after having received four grains at the root of the tail given to prevent the pain of caudal myotomy. This death was as sudden as if a lethal dose of strychnin had been given, occurring about three minutes after the dose had been administered, and a careful autopsy failed to disclose any contributing cause. Every organ was sound. The explanation given for such a misfortune is idiosyncrasy, an element that is not apparent until the damage is done.

Dogs have always been regarded as greater hazards from cocain anesthesia than horses. In this species we often hear of unexpected deaths from cocain, but as these animals vary so much in size, and therefore in the dose requirement, it was always thought that the error was posologic, rather than idiosyncratic.

The case in mind was a twenty-pound bull terrior bitch affected with a mammary carcinoma. The owner had set ideas against general anesthesia and pleaded for an operation under local anesthesia. Conscious of the dangers of cocain the dosage was carefully prearranged. One-tenth of a grain was decided upon as the total amount to administer. This was dissolved in three cubic centimeters of water (45 drops). One-half of this was taken into the hypodermic syringe and injected at two different places along the base of the tumor. While the syringe was being loaded with the second dose to deliver along the opposite side, the bitch began to tremble and gasp and in three minutes was dead. Suspecting generalized carcinosis an autopsy was held, but nothing was found upon which to fix a part of the blame. Here is a twenty-pound bitch that died from the administration of 1/20 of a grain of cocain hydrochlorate. As several drops of blood oozed from one of the needle punctures it is possible that a part of the solution went into a vein, that is 1/40 of a grain might have gone directly into the circulation. Even with this event in mind it seems plain that there are pitfalls in the most careful use of cocain.

Department of Live Stock Poisoning

By L. H. PAMMEL, Ph. D., Ames, Iowa
Professor of Botany, Iowa State College

It is the intention of the writer to use these columns to discuss the subject of poisonous plants. I shall, therefore, be glad to have readers of the American Journal of Veterinary Medicine send specimens of alleged poisonous plants to me. The queries will be given prompt attention.—L. H. P.

Poisonous Plants in a Pasture

MR. H. Jensen during the autumn of 1916 sent to me four plants from a pasture in which horses had been dying from acute poisoning. Two of the plants sent to me are certainly well known for their poisonous properties. One, the cowbane *(Cicuta maculata)* and the other wild *indigo (Baptisia leucantha)*. Cowbane which frequently goes by the name of wild parsnip is one of our most toxic plants. The flowers of this plant are white resembling a wild carrot and the plant produces a cluster of fleshy roots containing a powerful toxic substance which seems to reside in an oily aromatic fluid. It is interesting to note that the roots of these plants are much more toxic in the fall, winter and spring than in the summer. Live stock is not often poisoned or at least we do not have many reports of its poisonous nature. Here is an interesting case reported to me by Mr. J. A. Minteer, who says:

"I have just had a strange experience with my cattle, having lost a four-year-old cow and a yearling calf. I think that they were poisoned on some kind of weed root found in the slough. I locate it on a spot where a hay stack stood about two years ago. It had been removed, except the spoiled hay in the bottom. Last fall being dry I pitched it up, dried and burned the old hay, sowed rye and timothy seed, ran the disc harrow over it several times and noticed that we turned out lots of roots like small sweet potatoes, except that they were connected at the top. I thought they were the roots of a weed that grows a stalk similar to a seeded parsnip, having a shaggly top similar to an elderberry when in bloom. The stalk when matured is hollow. Now I am not certain that I am right about the top as it had been mowed before I discovered the tubers. I never thought of them doing any harm, just thought we had torn them out so they would die and do me no harm, but as the cattle, seventeen in number were brought up Sunday evening they appeared to be all right until they came into the large yard when a cow fell down and seemed to have a spasm. It only lasted a few minutes when she got up walked about 100 feet and fell again, got up and walked about thirty rods, fell again and died in about thirty minutes. The yearling was all right until turned into the lot. In about twenty minutes she was taken in the same way, except a little more severely, rose two or three times and died in about fifteen minutes. I was satisfied that they were poisoned but the cause worried me for a while, then I remembered the tubers I saw in the slough. I went the next morning before turning the cattle out and found that the cow and yearling had eaten some of the roots. I gathered up nearly a half bushel of the tubers, turned the cattle out and have had no trouble since. On opening the cows, I found considerable of the tubers in the stomach, and the inside of the stomach was very black." The cultivated parsnip (*Pastinaca sativa*) is not poisonous. Dr. Charles G. Hildwein of Bellevue, Iowa, asks whether it is poisonous. All experiments made prove that it is not very toxic. The flowers, however, may produce injury that resembles poison ivy poisoning. The trouble is that so many people call the cowbane "parsnip" and confuse the two plants.

The second poisonous plant sent by Mr. Jensen, the wild indigo contains a toxic principle. According to European investigation it contains baptitoxin which is prob-

ably identical with cytisin which is toxic. The wild indigo belongs to the pea family and is related to the rattlebox. It has large yellow pea like flowers. According to Hyams it is a violent emetic and cathartic according to Dr. Hughes another species produces primary pyrexia in the human subject.

Milkweed Poisonous to Chickens

Early last June I had a letter from E. L. Dumm of Newark, New Jersey, in regard to milkweed poisonous to chickens, enclosing a letter from Mrs. M. A. Bates, Reed's Ferry, New Hampshire. The letter is as follows:

"In seeking information to answer the question as to the poisonous qualities of *Asclepias cornuti* as per the enclosed letter from Mrs. M. A. Bates, Reeds Ferry, N. H., I wrote Professor Byron D. Halsted of Reutgers College, New Brunswick. He suggested in reply that I write you in regard to it. Mrs. Bates' letter will give you the details of their experience with young chickens and their suspicions of the milkweed. I am sure they would appreciate any information you can give them on the subject."

"I find in the chicken and turkey business I'd like to know more of medicine and medical botany. What are the medical or poisonous properties of milkweed, *Asclepias cornuti?* Last year the chickens were put into our new hawk yard and were dying by the dozens. In the fall the yard had become green again and we decided to remove our late chickens from the hill where they were doing nicely, to the hawk yard so as to have them together and so have much less work. There was little shade in the yard so I put as many coops as possible in the shade of the milk weeds which had grown well during the wet summer. I felt well satisfied with the green clean looking yard, clean coops and water piped into yard, but imagine my consternation when, after a very few days, the same old disease appeared among a thriving little lot put in there for trial. I turned them out of the coop with Bright Eyes, their mother, and watched them. She lead the whole tribe up to a nice young juicy milkweed and began eating the leaves. We decided to remove immediately all milkweed from the yard, after which there was no more of the peculiar sickness, except a rare case occasionally, and upon searching I would find a young sprout of half eaten milkweed somewhere which had escaped my daily search for it. We are keeping the milkweed out this year and have had no trouble with the sickness so far. One characteristic of the sickness was the sleepy appearance of the chick. It might have been caused by the mildew so much in evidence last year, as it was so wet, especially was this mildew or whatever you may call it on the milkweed, or some insect, but we feel sure it was the milkweed. We lost about 500 chicks that way last year."

Evidently not much is known about the poisonous nature of the Asclepiadaceae or milkweeds which are rather common weeds. One of the California species has a bad reputation. I have this to say in my Manual of Poisonous Plants, *Asclepias vestita*—said to be poisonous. The juice of this species and of *A. eroicarpa* are irritating. *Asclepias syriaca* said to be poisonous to live stock. It contains asclepion. Bees often become entangled in the pollen masses of this and preceding species and are unable to extricate themselves. Lehmann and other European writers list this species as poisonous.

Some Poisonous Plants of Idaho

In a short bulletin[5] of fifteen pages and seven figures, Floyd W. Gail of the Department of Botany and R. A. Hahner have given an account of the more important poisonous plants of the state of Idaho. Idaho is to a considerable extent, a grazing state. The following plants are described: death camas (*Zygadenus*), hellebore (*Veratrum*), ergot (*Claviceps purpurea*), larkspur (*Delphinium menziesii*), aconite (*Aconitum*, several species), lupines, several species loco weed (*Astragalus mollissimus*), cicuta or water hemlock and horsetail (*Equiesetum*). In regard to the water hemlock or cowbane, the authors find that the animal often dies in fifteen to thirty minutes. The authors state that potassium permanganate would be useful if given soon enough. They state the poisoning of horses from horsetail is doubtless of frequent occurrence in Idaho and other states. Dairymen state that foxtail, by which is meant horsetail, has no serious effect on cows. A few years ago the writer received specimens of the large horsetail (*Equisetum robustum*) from a correspondent in Kansas City, who stated that the plant was common in the river bottoms near Kansas City. The writer stated that it did not injure cattle feeding on the plant. In regard to loco weed (*Astragalus*) the authors find that it does most harm to horses. It causes a slow disease and the animal may linger six months or more. The figure in the bulletin suggests the stemless loco weed (*Oxytropis*). I wonder if the authors have not made a mistake. The stemless loco is quite as injurious as the *Astragalus*. We commended this bulletin to the veterinarian and the stockman for the lucid account of the poisonous plants contained. The bulletin may be had by addressing the University of Idaho, Moscow.

[5]Bull. University of Idaho Agrl. Exp. Station 8 :1-15 *f* 1-7, 1916.

Queries and Answers

The editor will reply to queries appearing here, as he is able and as opportunity permits, but he does not want, nor cannot undertake to monopolize this portion of the department. Any reader who can furnish further and better information in reply to any query is urgently requested to do so. Where the treatments advised in these replies is adopted it is hoped that those employing them will report their results whether good or bad. In all cases give the number of the query when writing anything concerning it.

IN REPLY TO QUERY No. 280. Dr. Steffen gives a lot of valuable information and describes the condition nicely for "crazy sore neck" in both forms. I find a ten per cent ichthyol ointment will relieve the irritating type in a few applications and will cause normal separation and deodorize the set-fast type. My advice is to keep away from astringents.—C. H. Falkins, D. V. M., Danbury, Ia.

REPLY TO QUERY No. 282, BY DR. G. A. JOHNSON: As a rule eversion of the rectum in pigs is due to improper feeds. This condition has developed in a few droves where large quantities of buttermilk were being fed, but we do not know that it has been fully determined that the buttermilk was the sole cause of same. In other instances, where this condition has shown itself to any considerable extent, it has been found that more or less of the feed being used was injured by molds.

As nothing is said in the inquiry, relative to the character of feed the pigs in question were receiving, we are at a loss to make specific recommendations in this line, other than to recommend a more or less complete change in the feed and to eliminate all feeds that may contain any molds or bacterial toxins. The fact that other pigs are interfering with the everted portion would indicate that they are in quest of some animal food, and we would recommend that they be given a fairly liberal ration of a good quality of meat meal, in conjunction with some clean, wholesome, easily digested foods, as middlings and linseed oil meal.

QUERY No. 284.—What are the proper rations of oats and hay for thoroughbred brood mares in foal, weighing 975 to 1,100 pounds each? These mares get about one to two hours' exercise each day in a small paddock and are stabled and groomed well. They were shipped here from New York two months ago. They have been getting one and one-half quarts of oats mornings and one and one-half quarts oats and two quarts bran in hot mash at night with all the hay they can eat twice a day. Kindly advise if this feeding is all right or give proper rations.—W. L. S.

REPLY: "Henry's Feeds and Feeding" has the following to say of the maintenance ration for horses:

"Zuntz and his collegues found that to maintain the weight of the 1100-pound horse and keep up the body temperature required 7.06 pounds of digestible nutrients, nearly 66 per cent were required merely as fuel to maintain the temperature of the body. Indeed, it was necessary to supply only 2.43 pounds of net nutrients to cover the amount used up in the internal work of the body and in repairing the body tissues.

This conclusion accords with the general experience, that idle horses can be maintained chiefly on such feeds as hay, corn stover and straw, which furnish relatively little net energy but produce a large amount of heat in the body as the result of mastication and digestion. If the roughages are of sufficiently good quality the animals may be maintained on such feeds alone. As roughages are usually far cheaper sources of total available energy than the concentrates, maintaining idle horses on such feeds is obviously economical."

The same authority has the following to say on the subject of feed and care of the brood mare:

"It has been estimated that only 60 per cent of the mares that are bred each year produce living colts. Yet the greater part of this enormous loss can be prevented by proper feed, care and management of the brood mare. Idleness, the bane of horse breeding, should be avoided. Working mares are more certain of bringing good foals than idle ones, but judgment must always be used in working them. Pulling too hard, backing heavy loads, wading through deep mud, or other over-exertion must be avoided. When not working, the mare should be turned out daily for exercise. As foaling time approaches, the

work should be lightened, and preferably discontinued three days to a week before foaling, although in many instances mares have been worked up to the day of foaling without harm. When laid off, she should not stand in the stall without exercise. A roomy, well-lighted, well-ventilated box stall with wide doorway and ample bedding is none too good at such times. Mares heavy in foal are apt to be cross and quarrelsome, but they should always be handled gently.

The feeding of the working brood mare is easier than that of the idle one. The essentials are a well-balanced ration of good feeds, containing a liberal supply of protein, lime, and phosphorus. An abundance of these is especially needed by immature pregnant mares and pregnant mares which are suckling foals, since in addition to the demand from the developing fetus there is the draft for the growing body of the mother in the one case, and for milk secretion in the other. All feeds should be free from dust, mold or decay, which might cause abortion. Mares used only for breeding purposes do well without grain when on nutritious pasture. With insufficient pasture and in winter some grain should be given. The feed should not be concentrated in character, but should have considerable bulk or volume. The bowels should be kept active through a proper combination of such feeds as bran, linseed meal, roots, etc."

From the foregoing it would appear—and experience supports this conclusion—that the mares to which you refer are receiving too little exercise and too much concentrates. These mares would be benefited by regular driving; failing in this, it would appear that at least they should be permitted the run of the paddock throughout the day. Further grain once a day unless they are driven, should suffice, and an equal weight of good alfalfa hay might be substituted advantageously for the bran in the given ration.

QUERY No. 285.—A mare, seven years old, had the lower fourth molar ejected by means of trephine and punch some three years ago. The case was presented to me last fall with considerable exostosis over the region of the ejected molar and a fistulous tract extending into the mouth. An effort was first made to heal it after thoroughly curetting the bone, using daily antiseptic wash, but this procedure failed, because the owner was unable to carry out directions to keep the openings clean. I therefore cast the animal and after again cleansing and curetting the bone, packed the cavity with gutta percha. This apparently was beneficial as the external opening healed and all connection into the mouth seemed to be closed, but about three months later it has again opened and is still discharging. Any information that will assist me with this case will be greatly appreciated.

REPLY BY DR. MERILLAT: It is evident the patient is affected with a dental disorder that has not been removed. There are several things that might be the cause of this stubborn fistula. The right tooth may not have been removed; the operation of repulsing the offending fourth molar may have damaged adjacent roots; and finally there may be a large sequestrum of bone lying between the mandibular plates. Curetting such tracts is always bad surgery; the actual cause is never removed by the curette. Scraping out bone cavities, especially about the teeth, is about the most harmful and worthless bit of inadvertent surgery we do. When a cavity, whether in bone or soft tissue, does not heal (barring malignancy which is rare in seven-year-old animals), there is some harmful agent within, begging removal. What this particular agent is must be left to the surgeon. I would advise that you put this animal down under proper restraint and anesthesia and then cut out a good, long elliptical island of skin and subjacent tissue right down to the mandible. Then with the trephine, or preferably with the chisel, open up the cavity. When access to the space between the plates is thus gained, it will be easy to determine what the trouble is, providing an aperture in the bone is made large enough to invade the interior for exploration. If no loose segment of bone is found, then you may be quite certain that the face of one of the molars is exposed, in which case extraction of the molar would be necessary. Such operations are easy and harmless if the surgeon will only take into account the vessels of the region that cannot be damaged with impunity.

According to the data contained in Bulletin No. 9, of the Wisconsin department of Agriculture, the veterinary population in this state consists of approximately 575 individuals.

Of this number 179 are non-graduates. The greatest veterinary population is in Milwaukee County, where there are a total of thirty-four licensed veterinarians; twenty-six of these are located in the city of Milwaukee.

Dane County is second with twenty-six.

The counties of Ashland, Bayfield, Burnett, Florence, Oneida, Vilas, and Washburn, have only one veterinarian each.

In addition to the 575 resident veterinarians fifty-one from other states are licensed to practice in Wisconsin.—M. R. STEFFEN.

POINTED OPINIONS ON LIVE TOPICS by Readers of Veterinary Medicine

It is in reports like those of this department that the current history of the progress of veterinary science is written. Are you leaving a record of your experience which will help others, as you have been aided by these and other clinical reports? If not, you are earnestly invited to contribute from your experience that this department may be of the greatest service to its readers. By so doing you will earn the thanks of the editor, the approval of the veterinary profession and the lasting gratitude of those who are aided by your suggestions.

Unqualified Practitioners a Menace to Live Stock Interests in Mississippi*

By JAMES LEWIS, Greenwood, Miss.

A MATTER that I think should be of interest to every member of this association and which is considered pertinent to an address of this nature is the progress being made in the problems of immunity. The progress is so tremendous that in the past few years our state agricultural department, in co-operation with the United States Department of Agriculture has put an agricultural demonstration agent in nearly every county in the state; fully equipped (with "tools" as they call them) to administer serum and vaccines. These agents feel competent to diagnose and treat any diseases that they encounter. An agent may or may not know one thing about physio-biological factors designated as ferments and anti-ferments. The problem confronting the medical world today is how to rationally maintain the normal balance between the ferments on the one hand and the anti-ferments on the other by increasing or decreasing either as the occasion requires.

The action of ferments and anti-ferments, as research has shown, is not necessarily specific in character. Hence, while specific reactions and changes are not denied, they are not the only factors involved in the process of immunity. Those of us that have been pinning our faith on specific therapy in the treatment and control of infectious diseases and relying upon the doctrine of specificity to explain the changes occurring during the process of acquiring immunity and in our study of immunology must prepare ourselves to accept and to understand the principles involved in the newer ideas gained from actual experimental research and clinical application of the knowledge acquired by a study of the role played by the physio-biological elements known as ferments and anti-ferments. The man who endeavors to keep up with the progress of scientific medicine of today has his work cut out for him; he must have extraordinary energy and be fortified with a mentality that is capable of being stimulated by association and contact with those who are interested and are working along similar lines. Yet the demonstration agent is passing as a medical man and I might mention here that we have in our state a number of very bright medical men that pose or act as if they were qualified veterinarians. They are not registered as veterinarians, but will go out and solicit vaccination and administer serum—some even attempt to treat all diseases in the lower animals whenever they get a call.

The illegal practice of veterinary medicine in our state is, in my opinion, becoming a positive menace, a source of gross danger to the health of the country through the ignorance of the person who attempts to apply a knowledge that he does not possess, thereby endangering the lives of the public through the transmission from animal to man of such diseases as anthrax, glanders, rabies, tuberculosis and many others that I might mention. He does not know of their existence, much less of their presence when they do

*President's address, Mississippi Veterinary Medical Association, Clarksville, January, 1917.

exist. It is difficult to use temperate language in denouncing this class of common vultures.

The quack, the dispensing wholesale house and retail chemist, the stable doctor, the horse dentist, the correspondence school graduate, the graduate of the disreputable veterinary college and the employer of the unlicensed man. This I must say is not encouraging to the prospective veterinary student. It is said that this is the age of competition, and if such be the case, I do not know of any business or profession that has so many illegal, unjust and unscrupulous competitors.

We all know that "quack" is a term that has been applied to the illiterate, the humbug and the crook. He is shunned by those who know his qualifications. He is an usurper, in that he takes to himself a title that is not legally or justly his, and at times his brutal and cruel excesses upon a poor dumb creature know no limit.

He is usually devoid of principle, honor, reason or sentiment. He will steal prescriptions of qualified veterinarians and scheme how to defraud and beat the law.

The prescribing druggist, that semi-professional crook, the avaricious creature, who will renew your prescriptions when you forbid it, he delights in stealing your prescriptions, or representing to the trade they are your prescriptions, and his greatest delight is when he receives a dollar through these fraudulent means.

The employer of a non-registered man defies the law and he knows it, and he also knows that an accomplice in the commission of an offense is equally guilty, and he knows that he is guilty, and he will continue in his way of law breaking, but let someone injure him in the same manner and see how quickly he will invoke the law that he continually breaks.

These conditions exist and will continue to exist until some action is taken and our law enforced.

PERITONEAL ASCITES WITH HYDROCEPHALIC FETUS IN MARE

I received a hurry-up call to see a mare and upon arrival found that she had been suffering about a week. The alleged cause of her suffering being the foolishness of the hired man trying to lift her off her feet. The weight of the mare was 1,700 pounds, and the owner thought that there had been a rupture of the abdomen. Upon examination, I found the abdomen greatly distended and full of fluid.

I immediately made a vaginal examination and found a dead fetus but could not make delivery on account of the great quantity of fluid. I inserted a trocar and several gallons of fluid escaped. After the escape of the fluid, I succeeded in removing the fetus, and the mare is doing nicely with no bad after effects.

Lemont, Ill. F. A. WALTER, D. V. M.

DAMAGED TENDONS AND INJURED LIGAMENTS.

By T. H. Kindred, McKillip's, Class '17.

The bugbear of the owner and trainer of race horses is injuries to suspensory ligaments and tendons. The frequent occurrence of accidents to these parts and the desire to learn the cause thereof led me to enter the McKillip Veterinary College.

If a man should go to sleep standing, he would fall, but if a horse goes to sleep standing, he may nod and sway, but will still remain standing. The reason for this difference between man and horse is an interesting one. The horse was created during the age of the survival of the fittest. He had many enemies, among these being the lion and the sabertooth tiger. His only defense against carnivorous animals was his alertness and speed. If he slept in a recumbent position he would have been an easy prey to them. So in order to take his rest and sleep standing, Nature supplied his legs with strong bands known as the inferior carpal check ligaments, and which join the deep tendon about the middle of the metacarpus.

It might be well to mention here the difference between the ligaments and other structures resembling ligaments, namely, the tendons. A tendon is a mass of white, fibrous tissue connecting a muscle with a bone, while a ligament connects a bone to a bone. Every joint of the horse is held together by ligaments. These are termed collateral ligaments and differ from the suspensoria by being made up entirely of white, fibrous tissue, their function being to hold the bones together in their proper relation to one another.

The suspensory ligament might as well be named a special ligament, as it differs from the collateral ligaments, the bulk being white fibrous tissue with considerable elasticity, and is the highly modified inter-osseous medius muscle. It also could be called a special ligament by its complex function: First, supporting the fetlock and assisting the deep flexor in preventing extreme dorsal flexion. Second, connecting the carpal bones with the metacarpal bones, the metacarpal bones with the proximal sesmoid bones, and by its bifurication and anterior attachment on each side of the long extensor tendon it assists in connecting the first and second and third phlanges, and thereby limiting volar flexion of the interphlangeal joints in certain phases of movement.

Posterior to the hock and located under the

superficial tendon connecting the fibula tarsal bone to the fourth tarsal bone is another important ligament, the calcaneocuboid ligament, the straining of which constitutes the well-known unsoundness called a curb.

An important tendon of the hock and one that is responsible for a large per cent of the lameness of that region is the medial branch of the tibialis anterior. It is sometimes resected for the relief of bone spavin, its origin being the dorsolateral face of the tibia. It passes over the anterior surface of the hock and inserts into the first tarsal bone on the medial surface. When you apply the hock test for spavin you are in reality testing this tendon and its underlying bursa. This is the reason why the hock test is so successful in diagnosing bone spavin.

When a horse injures a ligament or tendon, the cause, aside from traumatism, was due to the fact that the foot and its ground surface were in improper relation to the ligaments and tendons above. Horses running out barefooted rarely suffer from these troubles. Now and then a curb may be found. Careful observation of horses I had in training revealed that any suspensory trouble was usually accompanied by a low heel, and toe. I noticed that if the trouble was above the fetlock it was usually located in the tendons or sheaths and the cause was just the opposite from the one which produces the suspensory trouble. So in case of suspensory trouble I found that raising the heel and shortening the toe was usually accompanied by good results, while in tendon trouble I found that by slightly dropping the heel and giving the feet more ground bearing would activate the suspensory ligament and relieve the over-burdened tendons.

The problem of prevention of lameness consists of two main factors: First, proper food containing all the elements needed to make good, sound bone. This will prevent splints, spavins, ringbones, etc. Second, proper leveling of the feet to balance and equalize the weight to the ligaments and tendons. When a tendon is required to do the work of a ligament or a ligament to do the work of a tendon, both these parts are endangered and lameness is the result.

There are many kinds of feet. Like men's faces, no two are just the same. Each foot requires a different method of balancing and shoeing. I believe a good rule to follow for the prevention of lameness is to study the contour of your patient. If he is a horse with a short upright pastern he will do well with a fairly high heel and short toe, while if he is a long pasterned, low heeled fellow be careful in raising his heels. What suits the horse should suit his owner.

I do not believe a horse should wear toe calks. To the animal it is like climbing a hill, only in this case he never gets to the top. Then there is the added strain on the nails, and further, it raises the foot off the ground, preventing the frog from performing its function. When possible, use a concave shoe with a flat ground surface, clipped at the toe, the nails well forward, and rolled off at the toe.

RECOVERY FROM SEVERE ATTACK OF ASCITES

On January 9th, a client called me to his farm to see a 450-pound Hereford steer. This calf was one of a bunch of twenty baby beeves. The owner had noticed for a few days previous to my call that the steer was not eating as much as usual and was getting a little worse each day. The calf would go to the feed trough, eat a little ensilage and then go away from the rest of the herd and lie down.

On examination I found these symptoms. Pulse about normal; mucous membranes pale yellow; no rise in temperature; slightly labored breathing; paunch overloaded and pitted on pressure; slight peristalsis; dribbling of urine from the sheath; continual switching of tail and straining efforts as if attempting to defecate; occasional kicking of abdomen as in colic.

Diagnosis: Impaction of rumen with some urinary complications.

Treatment: One pound box of bovine hydragogue cathartic, consisting of salts and gamboge, in solution; four ounces of fluid extract of nux vomica; one and one-half ounce spirits of nitrous ether. I gave directions as to care and left a bottle of nux vomica and some spirits of nitrous ether.

The owner called me late next day and said no action had resulted from the physic. I called again and gave another box of physic, more stimulants and left stimulants as on the day before. The calf now would neither eat nor drink. The next evening the physic had acted but without sufficient force, so I called again and this time I gave a large dose of calomel and one-half box physic. In twelve hours the action from the bowels was what we wanted.

I heard no more about the calf until the 18th, when the owner called and said the steer was terribly swollen in the abdomen. I called again, found the stomach and bowels empty, but the calf very weak, and on pressure from the opposite side, I could distinctly hear the sounds of fluids in the abdominal cavity.

Diagnosis: Ascites.

Treatment: One-half grain strychnin hypodermically; two ounces nitre and two

ounces aromatic spirits of ammonia. I took an ordinary cattle trocar and tapped the calf about two inches to the right of the navel. We used a three and one-half gallon bucket to run the fluid into, and we drew off three buckets full, and as it was near dinner time and the calf was becoming nervous and exhausted, I stopped until after dinner as I didn't want him to die from the shock. After dinner we again inserted the trocar as near the place of the other puncture as possible and drew off the rest of the liquid, about four buckets full or a total of twenty gallons. This exudate was absolutely clear and of a very soapy nature (albuminous). The calf was very tired, and I again gave one-half grain strychnin and one ampule sterile camphor oil intramuscularly.

I told the owner I thought this was a hopeless case, but left some nitrous ether and digitalis to be given every three hours for twenty-four hours. I called the next day and found the calf stronger, more attentive to his surroundings, and the owner said the animal had drunk a little water. I left a solution of nux vomica and hyposulphite of soda to be given every three hours, some nitrous ether to be given three times a day, and instructed the owner to feed light food if the calf would eat and give one-fourth pound salts twice a day. As I had no desire to run a big bill on the man because he is ten miles from me, I told him I wouldn't be back, but if the calf did happen to yield to treatment, to come down when he got out of medicine and I would give him a supply. He was down in four or five days and got more medicine, said the calf was eating good and had no signs of refilling with fluid.

I saw the owner today (Feb. 5th), and he told me he had turned the steer back into the feed lot, and except for the emaciated look, one couldn't tell him from the rest of the herd. I also treated another calf in this herd with a case of tetanus following castration, which made a beautiful recovery.

Hillsboro, Ind. FRED W. GRAVES, V. M. D.

USEFUL FORMULAE

Where an application is desired to check suppuration the following has shown good results:

Sodium carb. crystals.....400 gm.
Water ..... 10 ltrs.
M. et f. sol.
Then add chlorid of lime.....200 gm.

Let stand half hour, filter through cotton and add, boric acid 40 gm.

A Non-Adherent Surgical Gauze

Paraffin .....℥III
White Wax.....
Lanolin aa.....℥II

Melt. Apply on gauze with brush as needed.

Lysol Substitute

Cresol .....2000.
Green Soap .....1750.
Alcohol qs. ad.....4000.

Melt soap, remove from fire, add cresol, when dissolved, add alcohol.

San Francisco, Cal. J. A. WYLLEY.

GRAIN NOT TO BE FED ALONE TO BREEDING HOGS

In order that losses by accident may be prevented and the period of usefulness of the animals for breeding purposes lengthened, breeders want hogs with strong, dense bones. Since cereal grains are low in mineral elements, they should be supplemented by feeds rich in these constituents.

When confined in yards, hogs are often fed largely or entirely on grain rations, so that their bones are soft and easily broken. Nutrition studies conducted at the Ohio Experiment Station proved that cereals alone will not produce normal growth of bone. Corn alone and corn with soybeans produced the least bone. Rations of corn supplemented by tankage and by skim milk produced the most bone.

Because of their high protein and lime content alfalfa and clover hay may be fed to advantage to mature breeding hogs, and in the spring green leguminous crops may be used. For feeding in connection with grains, to breeding hogs in confinement, the experiment station also recommends lime, corncob charcoal, bone flour and wood ashes. These may be fed in self-feeders, preferably mixed with a small amount of salt.

LUXATION OF THE PATELLA REDUCED BY TURNING

On October 25th, I was called to treat a two-year-old Percheron mare that was said to be very lame. The owner had in the meanwhile brought the animal into a barn nearby. Upon my arrival, I found the subject very restless, perspiring freely and shifting weight from one side to the other; the right extremity appeared as though it were too long, and the right hip seemed to be elevated due to extension of the stifle and the hock. When caused to move at a walk, she would hop along on the sound member and carry the affected one in a state of rigidity. The toe was dragged on the ground owing to some volar flexion. Attempts at backing the mare were unsuccessful.

On examination of the stifle, upward luxa-

tion of the patella was revealed. It seemed to be fixed upon the inner trochlear rim. I removed the animal from the stall with difficulty; then by grasping the halter, I forced her to turn in as short a circle as possible, using the affected leg as a pivotal member and turning her around twice. This caused a reduction of the luxation, if true luxation it was. The subject was then caused to walk, trot, turn both ways, and back, all of which were done without evidence of lameness.

A vesicant was applied to the stifle, and the mare was again turned to pasture in ten days. No further trouble was experienced until December 25th. I was then called and found her in the same condition as before. The same method was employed to correct the condition and a vesicant was again applied, and this was repeated in five days. Seven days later she was hitched in a team and has been working since without trouble.

Is this condition likely to occur periodically? Will advancing maturity influence it favorably, and is there any other method of treating that would be more beneficial?

E. A. Downs, D. V. M.

Mt. Sterling, O.

Comment: The condition may recur. Keeping such animals in wide stalls so that they may be taken from the stalls without causing a cramping of the quadriceps muscles or the tensor fascia latae, is helpful. Usually the condition, if this is one of "habitual luxation," ceases to cause trouble as the animals approach maturity. If recurrence is persistent, patellar desmotomy should be performed. A good description of this operation is given in Merillat's "Veterinary Surgical Operations." J. V. L.

FOR HUMANE SURGERY

I was interested in the description of the technic of caesarian operation in a heifer by Dr. C. F. Neis, which appeared in the February number of the Journal. On page 105 of this issue, Dr. Neis states that: "It is preferable to use anesthesia, but the operation can be performed without, by tying the front feet forward and the hind feet backwards to posts or studdings. Stimulants can be given before and after the operation and go a long way towards preventing surgical shock."

The logical inference is that one is justified in performing this or perhaps any other operation without anesthesia, if fatal surgical shock does not follow; that anesthesia merely serves the convenience of the operator, and that when restraint can supplant anesthesia, the additional work and slight hazard entailed by the employment of anesthetics, is to be avoided.

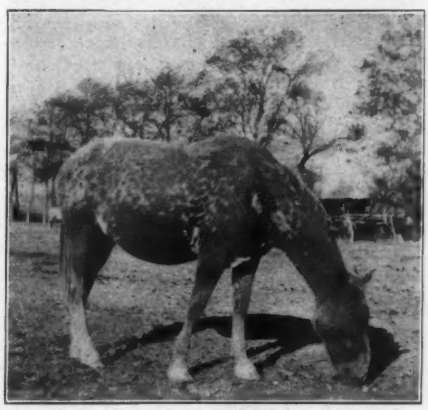
If veterinarians who, in their routine work are not equipped to employ general anesthesia, would always be humane and thoughtful enough to make use of chloral hydrate or morphin to the end that their patients shall not be the victims of barbarous treatment, as is now too frequently the case, our profession could justly claim to have made real progress in surgical work.

The purpose of this brief commentary on Dr. Neis' statement is not to charge him with the habitual employment of inhumane methods, but to call attention to the fact that as a profession we have been, in the past, too often unmindful of humane principles in our zeal to render satisfactory service; that, to satisfy our clients, the end and not the means has been paramount and, parsimonious frugality is the underlying cause of inhumane methods that should no longer be practiced.

J. V. Lacroix.

A CASE OF ALOPECIA SYMPTOMATICA

Enclosed is a picture of a young mare which has been running in the pasture with a large number of mules since last fall. Several months ago the owner informed me he had a mare which was losing its hair in spots and the first time I happened over his way to stop in and see it. I didn't get to see her till the latter part of last month.



As you can see by the picture she is very nearly nude of hair, skin smooth and not a scratch or eruption on it. Mare apparently in good health. Owner informs me one old mule is getting this way also. This mare is unbroken and I did not lay my hands upon her as would have to rope and

throw her to do so. Other stock in pasture with her in good condition. I would like to know what this is, cause, treatment, etc. She does not scratch or itch.

Bishop, Cal. E. C. HOWELL.

"MOUNTAIN DISEASE" POSSIBLY QUERCUS POISONING

One day last spring I was called to a mountain range twenty miles distant to see some cattle suffering with what the rangers call "mountain disease."

The history is as follows: The cattle are taken to the mountain ranges usually about the middle of May, depending on when the leaves appear on the brush. This disease is prevalent from the first to the middle of July.

The rangers think it is due to eating the underbrush as that is all they have been able to find on the range on which the cattle feed, at this time. This underbrush is called jack oak and is about the first brush to leaf out. They have a fuzzy bloom, that looks like the bloom of oak trees. So this is about all the cattle have to eat when they are first taken to the mountains.

Symptoms: The onset is somewhat gradual, usually beginning with a diarrhea of a black color, with a glistening appearance, and seems to be more profuse when the cattle move, the feces have a disagreeable odor. Rapid emaciation with dull listless appearance. Eyes retracted in orbital cavity and present a swimming appearance.

A brown or blackish discharge from nostrils which was more or less thick, and adhered to muzzle, this discharge has a disagreeable odor, which with that and the feces, one could smell the cattle quite a distance. In some of those suffering most may be seen blood mixed with the feces.

Rumination is suspended; there is anorexia, thirst, temperature highest in the ones that looked as if they might recover. The highest temperature was 102.3°F., those that were suffering most had a temperature of 99 to 101°F. and I believe before death it was even lower. Respiration was short and accelerated. Generally those that would eat bran would survive. The ailment lasted a few days to a week or more.

Diagnosis: Probably tannic acid poisoning. ing.

Treatment: Liquor calcis and oleum lini, in large quantities. Removed the animals from the brush, and fed bran to those that would eat.

My opinion preventitive treatment could be handled easier in these cases than curative.

Post mortem findings in the two dead ones were as follows: Bowels mostly normal, some places looked as if they were inflamed. Large bowels contained some water and a small quantity of the blackish substance which resembled the feces, voided. The rumen, contained a quantity of water a small amount of food which was thin and of a light brown color. The spleen was normal in both. The liver in one, normal and in the other the thin part of the lobes looked as if it had been scalded and shrunken, was tough and leathery.

Peritoneum: Normal.

Lungs: In both showed pneumonia.

Heart: Normal.

I would like to have a diagnosis and treatment as there are a number of good cattle die every year in the mountains in Rockingham county.

Bridgewater, Va. O. F. FOLEY, D. V. M.

CALF 24 HOURS OLD DIES OF PNEUMONIA

February 11th, I was called to the country by a man who raises pure bred Hereford cattle. The day before a calf had been born in his herd. He stated that it was a case of ordinary labor, and the calf was in good shape at birth, stood up and sucked as usual. The mother was a fine large cow and had good warm surroundings at calving time. But soon after birth the calf began acting drowsy and later labored breathing was noticed that continued until the next day, getting worse all the time until the animal died. Towards the last he would bleat as if in pain.

The owner called for me early in the morning, but I was out of town on a call and he left word for me to come out as soon as I got back. When I got there the calf was dying. He was gasping for breath and the temperature was only 102 F. So we autopsied the carcass to find the conditions of the lungs. We found the anterior lobe of the right lung all black and the remainder of both lungs was gray—there seemed to be no normal lung at all. The owner said a calf like it usually sold for $500 as a yearling as it was a fine, large calf and well marked. I am reporting this case as it seems to me to be quite marvellous that a calf only twenty-four hours old should die with pneumonia with apparently no cause for its occurrence at all so far as I could see.

WALTER FLEENOR, D. V. M.

Fairmont, N. D.

Comment: The description given indicates pretty clearly a case of calf pneumonia due to contagious abortion, the theory being that the calf may swallow amnionic fluid several days before birth and that the

organisms in this manner find their way into the system and to the lungs. It may be mentioned that the symptoms of contagious abortion are not always abortion per se. Sometimes the only evidence is retained after-birth or white scours and pneumonia in calves or sterility. Pyometra is a very common symptom. This herd should be watched carefully for contagious abortion.

DEATH FROM A MALIGNANT GROWTH

On the evening of January 8th a client telephoned that a growth had appeared on his mare's neck a week previous and that it had grown rapidly. Since the appearance of the enlargement, the mare had not eaten and was getting weak.

On arrival, I found a twenty-year old mare with an enlargement on the right side of the neck directly over the jugular groove. This was about ten inches long and eight inches wide, very hot, hard and painful. All visible mucous membranes were highly congested; temperature 104° F.; pulse very weak; double expiratory action. While examining the mare, she strained as if trying to urinate and a few drops of thick blood were passed.

The only history obtainable was that a week previously, the mare had been driven and the enlargement was then discovered, it being about the size of a child's fist at that time. The parts had been bathed with hot water and poulticed. The mare had not eaten since the enlargement was found. An aspirating needle introduced at three different points permitted the escape of a very dark colored blood of a gelatinous consistency. When making an incision, the finger could be pushed through the mass in any direction. The escaping blood, of the same character as obtained through the needle, contained small clots of material resembling pus.

The mare died on the 10th and an autopsy was held on the 11th. A large tumor, following the trachea into the thoracic cavity, was dissected out down to the first rib, to which it was adherent. A branch also extended over two ribs beneath the right scapula. The ribs on the right side were raised, allowing the escape of considerable fluid, and the right lung removed exposing the tumor to its source above the auricle of the heart. The heart was not of normal color and the muscle was friable. The tumor weighed nearly ten pounds. As the horse was on the barn floor, the owner did not want the abdominal cavity opened.

While the examination was being made, the following additional information was obtained from the owner. The mare had been sluggish for a long time, at least a year. During this time the mare had gone lame several times for short periods. The animal's appetite had not been good for some time previous to the appearance of the trouble.

Norwalk, Conn. M. Ray Powers, D. V. S.

SEVENTY-FIVE POUND TESTICLE IN A CRYPTORCHID

This horse was a ridgling, about fifteen years old. When hitched with or around mares, he never offered to interfere with them in any way. Weight, about 1400; good work horse, and never sick before. The symptoms in this case came on gradually, continuing to become very marked toward the last.

Symptoms: Drowsy, no ambition, disinclined to move about, when moved or turned suddenly, would manifest great pain.

Temperature 102 to 104° F., pulse weak, pulsations varied, rough staring coat, conjunctiva and visible mucous membranes slightly injected, no appetite. When walking, he would reel and stagger in the hind quarters. Very marked polyuria, urine contained no sugar or albumen. Hide bound, very emaciated, and drank large quantities of water.

Treatment: Gentian, iron, nux vomica, resublimed iodin, saw-palmetto. The iodin was given to aid in checking the polyuria, which it did very satisfactorily. Tonics aided the appetite and digestion. As soon as the medicine was discontinued, the appetite diminished and polyuria returned.

This horse suffered for about two months

and was then shot. On post mortem, we found the heart dilated and flabby; spleen hard and congested; peritoneum and intestines congested; right testicle weighed ten and one-half pounds; left testicle over seventy-five pounds; cystic tumor or cavernous tumor containing a bloody pus.

Lu Verne, Iowa. C. L. WHITTINGTON, M. D. C.

"WRY NECK"

November 5th, I was called to see a six-year gelding, weight 1050 pounds, used by telephone linemen and at first appearance thought the animal had tetanus, but on examination only the neck seemed stiff in the region of the poll. The animal was unable to reach the feed in the manger and feed-box. Backward pressure on the nose caused considerable pain, so that the animal would back up violently. Pulse, respiration, membranes, all normal. Percussion or palpation revealed nothing.

Treatment: Fomentations of the region of the poll, followed with liberal application of liniment until November 11th, produced no change. Then two doses of one-twentieth grain each of lobelin sulphate hypodermically, one hour apart, produced relaxation enabling the animal to reach his feed.

On November 12th, the neck became stiff as before, so that on the 13th, one-twentieth grain lobelin sulphate, three times a day produced a slight relaxation with fair apparent recovery till the morning of the 16th, when treatment was discontinued until the 17th, when the condition had again returned.

Treatment was again commenced and used intermittently for about a week. Laxatives were also used. On December 13th the patient seemed to be all right. Later a slight stiffness showed at times. At the present time (January 4th), the patient has been driven a few times but does not seem quite right. Before this trouble began this patient was driven with overcheck which was drawn much too tight and which cause I blame for the trouble. A week before I was called, salivation following slight exposure to a cold rain, was quite profuse for one day.

Forreston, Ill. R. E. KLUCK, D. V. M.

WANT A $5,000 POSITION?

A. D. Melvin, Chief of the Bureau of Animal Industry, Washington, D. C., has received an urgent cablegram request from the Minister of Agriculture of Colombia through the Colombian legation in Washington for a veterinarian with experience who is willing to take up work for the Colombian government. Dr. Melvin states that it is evidently the expectation of Colombia to establish a veterinary school and that the position would probably carry a salary of $5,000 per year in gold and include transportation. He suggests that those making application for this position should have a knowledge of Spanish.

Asked concerning conditions veterinary in Colombia, Dr. N. S. Mayo of Chicago said:

"Colombia is one of the most important cattle producing countries of tropical America. She has exported cattle for a number of years, and the quality of cattle produced has been better than most other tropical countries. The cattle industry is one that can be developed very extensively, not only in quantity, but also in quality.

"Colombia will undoubtedly organize a Department of Animal Industry along lines similar to our Bureau of Animal Industry. This will enable her to ship here animals and meat products under her own recognized official inspection.

"The coast country of Colombia is very

warm and moist. The interior is mountainous with many high plateaus, and has a temperate, almost cold climate.

"Here is an opportunity for some well trained American to organize a Department that will be a credit, not only to the Republic of Colombia, but to the credit of the veterinary profession of North America."

A NEW VACCINATING TRAY

The convenient tray, illustrated elsewhere in this issue, for holding serum, instruments, etc., during the work of vaccination is a most useful contrivance. There are two porcelain cups of different colors, a white one for serum and a green one for virus. Between the two cups is a solution chamber, large enough to hold the longest syringe, and on the side of this chamber there is ample space in which to keep extra needles or other instruments. The tray is made of nickel plated metal, can be hung up on any wood or wire fence and when folded can be carried in any ordinary hand bag. This contrivance should meet the needs of the up-to-date veterinarian who is called upon to do vaccination, as the convenience of such a receptacle will facilitate his work; its construction is such that it can readily be sterilized, thus safeguarding the instruments and serum from contamination; and besides it makes a good impression upon the client. The convenience, the safety, the class and the professional tone of veterinary work are always enhanced by the use of appropriate instruments and apparatus, and this new device should recommend itself to the practitioner as an important aid to proper technic in vaccination.

QUESTIONS USED IN CIVIL SERVICE EXAMINATIONS FOR THE POSITION OF VETERINARY INSPECTOR IN THE B. A. I.

Anatomy and Physiology

1. Give microscopical and macroscopical appearance of the flesh of cows, calves, sheep and swine.
2. Give minute anatomy of bone and also a lympathic gland.

Pathology

1. Define edema; ulceration; ptomain; fatty degeneration; pyemia.
2. Give microscopical appearance of Cysticercus cellulosae; Tinchina spiralis; and tuberculosis; also actinomycosis.
3. What are the most frequent diseases following partition in cattle? Is the flesh unfit for food, if so, give reasons?
4. Give pathological lesions of anthrax and black quarter.

Meat Inspection

1. Name three diseases of sheep and give post mortem lesions of each.
2. Name three diseases of cattle that are communicable to man and describe fully the appearance in a dressed carcass of one.
3. If tuberculosis is suspected and no pathological lesions are found in the lungs where would you look for it and how diagnosed?
4. According to the act of Congress, approved March 2, 1895, could condemned meat be sold? If so through what channel?

Anatomy and Physiology

1. Describe and give the exact location of the lympathic glands of the thoracic cavity.
2. Give the minute circulation of the spleen.

Pathology

1. Describe the microscopical appearance of inflammation.
2. What is jaundice? Give the causes.
3. How do you differentiate between rabies and encephalitis?
4. Give diagnosis of a case of tuberculosis in a living animal; also in carcass excluding viscera.

Meat Inspection

1. How can you tell abscesses and indurations resulting from tramatisms from those of tubercular origin?
2. How can you detect anthrax in a carcass (viscera excluded)?
3. Would the meat of animals affected with metritis be fit for food, if so, under what circumstances?
4. How long and at what temperature must pork be treated to destroy trichina?

Anatomy and Physiology

1. Through what passage does the peritoneal cavity communicate with the exterior of the body? Describe fully.
2. Name and give the situation of the most important groups of lympathic glands which should be examined for detection of tuberculosis in bovine.

Pathology

1. Starting from a mesenteric gland in what direction and through what channels might an infectious organism be carried and where will it lodge?
2. What pathological conditions may be the cause of an accumulation of a fluid in the abdomen?
3. What is inflammation and to what different conditions may it lead?
4. What is pus and how does it appear to the naked eye?

Meat Inspection

1. Under what general pathological conditions is the flesh of animals unfit for food.
2. Where are the lesions of hog cholera usually found?
3. In what diseases are lesions found which may be mistaken for tuberculosis?
4. How would a diagnosis be made after animal's death?

5. In what stage of tuberculosis must the flesh be regarded as infected?

Anatomy and Physiology

1. Give in detail the appearance of a living, healthy animal.

2. Name and locate the principal lympathic glands that should be examined for tuberculosis. Describe the microscopic appearance of a lympathic gland.

Pathology

1. A cough is indicative of what disease in cattle? Sheep? Swine?

2. Define (a) putrefaction; (b) ulceration; (c) emphysema. Name six diseases in which they are found.

3. Name the diseases of domestic animals causing lesions of the skin. Give the pathology of two of them.

4. Name the diseases of domestic animals in which there is marked alteration of the blood and give the symptoms of three.

Meat Inspection

1. How would you make an examination to determine positive pregnacy in (a) cow; (b) sheep; (c) sow?

2. How long during an attack of peritonitis is the flesh unfit for food? What circumstances prolong that period?

3. What circumstances other than disease interfere with the firming of a carcass?

4. What is the law regarding the inspection of swine for interstate and foreign shipment?

Anatomy and Physiology

1. Give the appearance in the normal condition of mucus and serous membranes and give their functions.

2. How would you tell by looking at small pieces of a lung and liver whether they were from sheep or swine?

Pathology

1. Give the symptoms pathological lesions and postmortem appearance in a case of malignant edema and what disease might they be mistaken for?

2. Give the pathology of emphysema and uremia and the several diseases which may cause them.

3. Describe fully two forms of degenerative process and name the diseases in which they are found.

4. Give the pathogenesis, pathology and postmortem appearance of peritonitis.

Meat Inspection

1. Give the normal characteristic of the muscle and connective tissues of the ox; calf; sheep, and swine.

2. Describe fully how to prepare a specimen of tuberculosis and anthrax for microscopic examination and give the appearance under miscroscope.

3. Describe the several processes by which you could positively diagnose glanders.

4. Name five diseases of cattle that can be transmitted to man by consumption of the flesh. Name five diseases not so transmitted.

5. Tell how an inspector can dispose of condemned meat under present laws.

Anatomy and Physiology

1. Give the anatomical position of the following organs in the cow: spleen kidney; abdominal aorta; posterior mediastinum.

2. Give fully the function of any two of the following organs: pancreas; spleen; kidney; cerebellum.

Pathology

1. Differentiate between degeneration and infiltration and name the most important examples of each.

2. Define thrombosis and embolism.

3. Define the pathological appearance of the intestine in acute and chronic enteritis. Name the diseases of the ox, sheep and swine in which they are an accompanying symptom.

4. Describe the pathological anatomy of the various stages of pneumonia.

MISSOURI VALLEY VETERINARIANS MEET AT ST. JOSEPH

The semi-annual meeting of the Missouri Valley Veterinary Association, held at St. Joseph Veterinary College, St. Joseph, Mo., February 14, 15 and 16, 1917, was perhaps the largest the association has ever held in the point of attendance and was fully up to the high standard of previous meetings in the quality of the program rendered.

The meeting was called to order by the president, Dr. R. C. Moore, president of the St. Joseph Veterinary College, who introduced Mayor Elliott Marshall of St. Joseph, who welcomed the veterinarians to the city in a formal address, which was responded to by Dr. Nelson S. Mayo of Chicago.

Blattenberg Fools the Bean Town

In his response to the address of welcome, Dr. Mayo cautioned the mayor against being too trustful of veterinarians and related an incident that occurred at the time of the completion of Dr. John H. Blattenberg's new garage in Lima, Ohio. It appeared that Dr. Blattenberg, with his usual predilection for putting on a show, staged an extensive dedication performance on the occasion of the completion of his new public garage. As a feature of the evening he arranged for a sure-enough boxing bout or in reality a genuine prize fight between a couple of negroes. The mayor and other city officials were invited to attend the performance and they accepted, as did a majority of other prominent citizens of the town. Secretly the wives of the mayor, city officials and other prominent citizens were invited also and seated in a part of the garage curtained off from the

portion occupied by the men. The fight was staged and when it reached an interesting point, the doors in the front and back of the garage were knocked off their hinges by sledge hammers and in rushed the entire police force, as arranged for in advance by Dr. Blattenberg. The city officials and prominent citizens jumped through the windows, dashed to the doors and were stopped by the policemen outside, crawled behind boxes, vanished anywhere that they could. Simultaneously with the entrance of the police, the curtain was raised and the wives of these prominent citizens were treated to the spectacle of their husbands fleeing from the law. Needless to say, Dr. Blattenberg had the time of his young life.

A Poetic Offering

Dr. Mayo spoke also of his many years' residence in the Missouri Valley territory, and speaking of the feeling he had for the open prairies of the middle west, with his usual penchant for quoting poetry, closed his address with the following words:

"Sweeter to me than the salt sea spray is
the fragrance of summer rains.
Dearer to me than the mighty hills are the
wind-swept western plains.
Dearer the sight of a shy wild rose by the
roadside's dusty way
Than all the bloom of poppy fields ablaze
in the sun of May.
Gay as the bold poinsettia is, and the burden of pepper trees,
The sunflower, tawny and yellow and
brown, is dearer to me than these,
And rising ever above the roar of the
hoarse, insistent sea
Is the voice of the prairie calling, calling
me."

Dr. Moore, in his presidential address, felicitated the members of the association upon its power, importance and accomplishments. He stated he believed it was as much a part of the veterinarian's business to attend meetings of veterinary associations as it was to answer professional calls. He expressed the hope that the scope and influence of the Missouri Valley Veterinary association would be widely extended.

What Shall Be the Entrance Requirements for Colleges?

Regarding the entrance requirements for admittance to veterinary colleges, he said in part: "Many are calling for the completion of a high school course; but does such a standard meet the present needs? Could all high school graduates pass the present B. A. I. requirements, if these are honestly fulfilled? Have the applicants who are high school graduates, as a class, reached the mature age to be entrusted with the responsibilities of our profession? Have high schools, especially in the more rural districts, been established long enough to guarantee that all have an equal opportunity to acquire a high school diploma?

"Is not the man who has acquired an education outside the school room just as worthy (other things being equal) as the high school graduate? Are we standing by American principles when we exclude worthy men who possess the necessary fundamental knowledge to successfully master the course of instruction as now given in the accredited veterinary colleges? Is there not some method by which examinations could be conducted by a central board that would give us a uniform standard that would protect the profession against ignorance, and at the same time be fair to all?

A Central Examining Board for Veterinary Students

"Last, but not least, would we not be doing more to elevate the standard of veterinary science in America if arrangements were made whereby such a central board annually examined all students of the freshmen and sophomore classes for admission to enter the next higher class? It would seem that this question is of paramount importance to the very life and harmony of the veterinary profession at the present time, and every veterinarian and every veterinary association in this country should give it their earnest consideration and help to adjust it in a way to conserve the rights of all, that peace and harmony may dwell in our ranks and to the end that our house be not divided against itself.

"I believe this thought deserves our earnest attention at this particular time.

"There is but little danger of the profession being crowded so long as the quality of professional service offered to the public is in keeping with the needs of our ever advancing economics.

Quality Not Quantity the Desideratum

"In the past the object has been largely to build a profession, but we have reached a stage where it is not so much a question of increasing the number as it is to improve the quality. What met the requirements of twenty years ago, will not be found sufficient for the present, nor will that of the present meet the demands of a decade hence. To meet the present wants and the demands of the future, our entire educational system must be ever on the upward march. Better students, better teaching, better facilities, longer terms and a closer application will be necessary.

"Practically all of the private veterinary colleges have added 33⅓% to their minimum requirements in length of time within the past year, and the advanced matriculation requirements of the B. A. I. for a higher educational standard for matriculants is a long stride in the right direction, and I believe will soon work wonders in this line. The older practitioners will, in most cases, be satisfied with their accomplishments, but many of the younger ones will soon feel the need of a better professional training, and I believe the pressure of the times will soon induce many of the three-year graduates of recent years to re-enter college for advanced training. That a higher basic training is necessary for meeting the requirements of the times cannot be questioned, but how to determine that the applicant possseses the necessary qualifications to master a scientific course of the magnitude of veterinary medicine, would seem to be a most difficult problem to solve."

A Pleasant Luncheon With Business Men

The commerce club of St. Joseph gave a luncheon at the Robidoux hotel on the first day of the session, to which veterinarians were invited. About 100 attended the luncheon and listened to an able address by the Hon. Clinton R. Woodruff of Philadelphia on the "Duties of a Citizen."

On the afternoon of the first day, Mrs. A. H. Holkenbrink, head of the local committee in charge of the entertainment for the ladies, arranged for a theatre party.

At the afternoon session, Dr. Adolph Eichhorn of the Lederle Laboratories, Pearl River, N. Y., presented a lengthy and scholarly paper on the subject of biologic therapeutics in veterinary medicine. This paper will probably be published soon.

Following this Dr. T. P. Haslam of the Purity Biological Laboratories, Sioux City, Iowa, presented a carefully prepared paper on improved methods of immunizing against blackleg. Dr. Haslam pointed out that in using the ordinary blackleg vaccine, veterinarians are employing an uncertain product and that unsatisfactory results must inevitably follow in some cases and that the loss thorough failure to immunize with blackleg vaccine and through vaccination blackleg is far greater than the cost of immunizing with the serum simultaneous method.

Dr. G. A. Johnson, Vice-President of the Purity Biological Laboratories, followed Dr. Haslam's paper with a discussion of the immunization of farm animals. Dr. Johnson said in part:

Natural Immunity

From the earliest times, it has been known that certain animals are not susceptible to certain diseases. To illustrate: solipeds are rarely susceptible to foot-and-mouth disease, while cloven-footed animals usually are. On the other hand, cloven-footed animals are not susceptible to glanders while solipeds are.

Solipeds are said to be **naturally** immune to foot-and-mouth disease, while cloven-footed animals are said to be **naturally** immune to glanders.

It has also long been known that in certain diseases, usually transmissible in character, one attack renders the animal immune to another attack of this disease. This has been termed **acquired** immunity.

History of Vaccination

The establishment of this fact, early led to a study of artificial immunity, which was apparently first practiced in the East, with smallpox, by vaccination with pus from pustules of infected persons. This was followed by the discovery of Jenner, that the vaccination of man with the lymph of cow pox would immunize the person against smallpox; but it was not until the discoveries of Pasteur and Koch, during the last quarter of the nineteenth century, of practicable methods of isolating and cultivating bacteria that any considerable progress was made in biologic therapy. That is to say, biologic therapy has been almost wholly developed within the life time of most men present. How many of us appreciate the fact that we are living in the greatest epoch of medical science.

The change from drugs to biologic, or, as it might better be stated, nature's medication; for biologic medication is based upon nature's methods of combatting disease, while drug medication is based upon man's imperfect knowledge of drugs and pathology, is so radical that it is very doubtful if any of us have a very clear comprehension of the character, magnitude or rapidity of this change.

It took more than eighteen centuries for man to learn the use of the first one of nature's methods, that of smallpox vaccination in man, while a large number have been brought into use during the last quarter of a century. Wonderful and startling as this is, it is secondary in medical significance, the first and more important being the transition from curative to prophylactic medication.

Errors in Prophylactic Treatment

A very important phase of prophylactic treatment that frequently does not receive the consideration that its importance demands, is that we are supposed to be dealing largely with healthy animals, but frequently it is determined too late, that such was not the case.

To illustrate, it is sometimes stated that healthy hogs begin dying three to four days

after vaccination, with vaccination cholera. Such statements show a lack of knowledge, because it takes a very acute, virile virus to kill pigs in seven to eight days after inoculation.

The facts are, that whenever hogs or pigs die of cholera three or four days after vaccination, they were affected with cholera at the time of vaccination and consequently were not healthy at the time.

Such errors may be justly termed errors of administration, because it is up to the one administering a remedy to know the condition of the animal or animals, as well as the proper dose and method of giving it.

Changes That Bring About Immunity

It is a lamentable fact that we know very little, except theoretically, about the changes that actually take place within the vaccinated animal that produce immunity, nor do we know a great deal about vaccination except clinically, and like clinical observations of other kinds, it is frequently incomplete, inaccurate and wrongfully interpreted, consequently more or less erroneous ideas and conclusions are put forward.

This is especially true regarding anti-hog-cholera serum and its administration, which is the most extensively used serum at the present.

Taking into consideration the large amount that has been used, and the diverse conditions under which it has been administered, the results are far better than could be reasonably expected, yet there are occasionally instances where the results have been very unsatisfactory and discouraging.

There is a reason for every one of these cases, and frequently the cause or reason is very easily discovered, while other instances may baffle our present knowledge, but they are always to be found within one of two general points: that is, a poor serum or virus, or both, or improper administration.

Most Serum Good at First

During the past two years a very large percentage of serum produced under government supervision, has been of good quality at the time it left the plant. It may be injured in transit, but this does not happen very frequently, so it is safe to say that a very large percentage of the serum that is produced by government licensed plants, is good at the time it reaches the farm, but this does not necessitate it being good when it is introduced into the hog, because it may pass through an infected syringe, or, as is more apt to be the case, it may be poured from the bottle into an infected dish, or it may become contaminated in the dish by dust blowing into it or by the introduction of a syringe that has become contaminated by coming in contact with dirty hog hair, the operator's hand or otherwise. While such instances are not very frequent, yet in the aggregate the number is quite large and accounts for quite a percentage of the unsatisfactory cases of vaccination, and they are so easily obviated by having clean, sterile syringes, and drawing the serum direct from the bottle into the syringe (for the purpose I prefer a short, large caliber needle, run through a rubber cork).

The Size of Dose Important

Another quite common cause of unsatisfactory results is giving too small a dose. Probably this most frequently occurs as a result of under estimating the weight of the pigs, but in other cases it is done with a view of economy. However, the most common cause of unsatisfactory results is due to the operator failing to ascertain the exact condition of the drove, or, to state it in another way, the operator failing to properly diagnose his case and then regulating his procedure according to the indication.

To illustrate: a drove of pigs that are infected with some disease other than cholera, that is causing some loss, should not be given the simultaneous treatment, in fact, serum should not be given such a drove unless there is an exposure to cholera, and then serum alone should be used. This may carry them along until they are in a proper condition to stand the double treatment.

This fact should always be borne in mind, that it is better to let a drove of pigs die **without** vaccination, than it is to have them die **after** vaccination.

Again, experience has demonstrated that pigs that are in an unthrifty condition require a correspondingly larger dose of serum, to assure satisfactory results.

Failure Often Due to the Virus

Another quite common cause of unsatisfactory results is due, theoretically to the failure of the virus, either because of too small a quantity being given, or to it becoming attenuated because of age, or the use of too much preservative, as when one per cent phenol was used, and other unknown causes. Many cases, and some experiments, apparently indicate that good virus may suddenly lose its virulence without in the least changing its macroscopical appearance. The causes of these sudden and radical changes in virus have not as yet been satisfactorily explained, but we know that they do occasionally happen, and the only relief that we have at the present, for all failures of virus is to revaccinate as soon as possible after a drove breaks.

Many points that have come up during the past two seasons, seem to indicate that it requires more serum and virus to thoroughly immunize pigs of a drove that has

been immunized for three or four years, than it does to immunize pigs of equal size and thriftiness, of a drove that has never been immunized.

Greatest Difficulty to Successful Vaccination

Probably the greatest obstacle confronting prophylactic medication at the present, is the fact that too often it is not considered a professional question by either laymen or veterinarians, and it can hardly be expected that there will be any radical changes along this line, until the veterinarians as a profession wake up to the fact, by qualifying themselves, and then treating all cases as professional cases, giving to each the attention that its importance demands.

It is a well established fact that as long as vaccination, be it against black-leg, anthrax, hog cholera, or what not, is done in an empirical manner, by any considerable percentage of veterinarians, so long will it be considered empirical by the public. How frequently veterinarians say "Oh I don't bother with black-leg or anthrax vaccination, because there is not enough in it." It would appear that this is a shortsighted business policy, because if you are not willing to do black-leg vaccinating, why should the owner call you to vaccinate his pigs, or a horse for distemper, or his cattle for anthrax, or to give the tuberculin test, etc.

The producers are responsible, to a greater or less degree, for this condition, by advertising broadcast how simple a matter it is to immunize with their products, thus misleading the veterinarian as well as the layman, while many have gone so far as to cater to the layman's business. This sometimes forces other firms into this field, to a greater or less degree, against their better judgment.

Another very important factor in the bringing about and the maintaining of the above condition, is the fact that some of our federal and state laboratories are used to produce this line of products and distribute them direct to the layman. Under such conditions, is it reasonable to expect the best results? Emphatically, no. Such conditions would not be tolerated at all in human medicine.

The Failure of Prophylactic Medication

Although the picture is not as bright and clear as we might wish, we are making progress, and making it rapidly, and when the veterinary profession can demonstrate to the layman and others that they are the best qualified to do this work (and the best way to make such a demonstration is to give sufficient study and attention to the subject in hand to get the best results), then, and not until then, will the veterinary profession be in a position to demand the proper placing of this important and growing field of veterinary medicine.

Administration of Blackleg Serum

Dr. S. E. Houk of the Continental Serum Co., Muscatine, Iowa, presented a paper on the proper administration of blackleg serum and veterinary biologics. Dr. Houk's discourse was a plea for greater care in the administration of serums and vaccines. He pointed out that after the administration of the two latter, there is a negative phase during which the animal's susceptibility to the disease in question is increased and that by an over dose this negative phase is accentuated in a manner harmful to the animal, so that the attempted immunization or treatment does more harm than good. He pointed out that the same undesirable effect may be obtained by the too frequent use of a proper dose. He emphasized the necessity of a careful diagnosis before the use of any biologic product.

The Cause of Vaccination by Farmers

He pointed out the fact that the veterinarian often found no sterile instruments available and that the temptation to use too little antiseptic solution or broken syringes often wastes their value many times over by unsatisfactory results in the end. He affirmed that carelessness in injecting hog cholera serum and other biologic products must inevitably lead sooner or later to dissatisfaction and disaster, and that nothing leads quicker to open criticism and farmer and county agent competition than the employment of careless technic on the part of veterinarians.

Regarding the administration of blackleg serum, Dr. Houk said in part:

Technic of Blackleg Immunization.

Briefly outlined the technic for the use of serum in immunizing against blackleg is as follows:

Blackleg serum is a sterile product filtered and preserved. It comes to you sterile in the original container and should for best results be kept so until and after it is administered.

The instruments needed are two or more sterile syringes of 20 c.c. capacity or larger. Plenty of sterile needles and a syringe filler to fit the bottles. At least two and better three pans for antiseptic and a bucket of antiseptic solution and a sponge or cloth. There is no preference in the field of operation as far as results are concerned, however, for convenience the side of the neck is to be preferred. With a pair of clippers have the attendant clip the hair from a small area on one side of the neck as close as possible, and wash and sterilize the area as thorough-

ly as possible, at this point inject the required amount of serum subcutaneously.

The needles and syringe should be kept in antiseptic solution when not being used. If there is any blackleg infection in the herd those that are suspected should be treated last or with separate instruments. If any swelling or local disturbance is noticed the virus should not be given at the regular time, three days later as this indicates that the animal had previous infection. There is no danger of giving too much serum as it is a sterile product and large doses will not cause any bad effects. On the other hand, it is highly essential that the animals receive enough serum to protect them against the blackleg virus. In addition to rendering the antiseptic more effective the clipping of the hair serves to mark the animals so that those which have not received serum will not be given the virus later. The dosage for serum is from 15 c.c. for small calves to 40 c.c for the largest usually vaccinated. In administering the virus three days are allowed to pass after the serum is given, at which time the virus is given in the following manner:

Have the same facilities for antiseptics and for clipping and preparing the field of operation. Clip a small area on the opposite side of the neck and after it has been prepared as for the serum, inject the required dose of virus. At least two pellet injectors should be sterile and at hand and used alternately, keeping them submersed in the antiseptic between operations. Always be careful not to give virus to calves that have received no serum. The clipped hair on one side of the neck will show that serum has been given and the other side will show that virus has been used.

The Dose of Blackleg Serum and Virus

The dosage for virus is one pellet for calves receiving 15 c.c. to 30 c.c. and two pellets for calves receiving 30 c.c. or more. The reason for the time required between the giving of the serum and virus seems to be that it takes the serum about three days to be absorbed and distributed throughout the animal body, on the other hand an injection of virus will kill an animal in eighteen to thirty-six hours. It is therefore necessary for the serum to have time to be absorbed before the virus is given. Never give virus sooner than three days after giving serum and never later than four days. It is of greatest importance that this point be strictly observed. The use of blackleg serum and virus have been attended with great success. In giving the old treatment for immunization against blackleg it has been demonstrated repeatedly in the field that if the virus is strong enough to immunize any large percentage of the herd, it will be strong enough to kill some of the animals. On the other hand if the vaccine is so weak that it will not kill any of the animals the result is no immunity or at least low immunity which only lasts a short time. In cases of infected herds the animals will continue to die for about four days, after the vaccine has been used, if the vaccine works its best. The serum treatment will stop the deaths in twelve to twenty-four hours.

Although the cost is somewhat greater the serum treatment is much to be preferred, because of the saving in animals and the prompt checking of outbreaks. It is hoped that the veterinary profession will take up and help introduce the use of blackleg serum now that it has been thoroughly demonstrated in Kansas and is now recognized by the United State Bureau of Animal Industry.

Keep from the Hands of The Laity

In this way only can the use of this new and valuable product be kept in the hands of the veterinary profession where it belongs. Strict adherence by all practitioners to the fundamental principles necessary in administering veterinary biologics will result in better success in the field. This will mean increased practice at better prices and increased profits for the farmer in which we can justly share.

Skillful operations, good technic, correct diagnosis and good results will go a long way toward influencing proper legislation and eliminating unwholesome competition. The country at large will be the better off and the use of all veterinary biological products will be wholly in the hands of the veterinary profession.

Experiments in Hog Cholera Transmission

Dr. H. Preston Hoskins of Parke, Davis & Co., Detroit, presented an extended discussion on hog cholera transmission experiments. Dr. Hoskins pointed out some recent experiences of his at the laboratory of Parke, Davis & Co., Detroit, and also a previous experience at the University Farm of Minnesota, which led him to believe that hog cholera may not be nearly so easily transmitted from infected to non-infected hogs by intermediate objects as it has heretofore been considered. He stated that as an experiment several susceptible pigs at the University Farm were penned in close proximity to an incinerator where the carcasses of virus hogs were destroyed, and although the pigs remained there for several weeks and no precautions were taken to prevent the spread of the infection, they did not succumb to the disease, and later experimental inoculation showed them to be susceptible.

At the laboratories at Detroit, a number

of susceptible pigs were penned 100 feet from a pen in which diseased hogs were kept continually for many weeks, and daily the attendants were among the diseased hogs taking their temperatures, feeding them, carrying out the dead ones, etc., and then went from this pen directly to the susceptible pigs, and yet the latter did not contract cholera, although their susceptibility was demonstrated later by experimental inoculation.

Dr. Marion Dorset related similar experiences at the United States Live Stock Sanitary Association meeting at Chicago the first week in December last. Both, however, pointed out that these experiments are too few upon which to base definite conclusions, and that until more has been learned regarding the transmission of cholera, no chances of carrying it by intermediate objects should be taken.

The paper announced on the program by Dr. B. W. Murphy of Topeka, Kansas, on the subject of what is the proper fee in the use of anti-hog-cholera-serum was looked forward to with a great deal of interest as this is a subject on which there is a wide diversity of opinion. It was with great regret that the association learned of the recent death of Dr. Murphy's son. Dr. Murphy was excused from participation in the program.

Why Are Mature Cattle Immune to Blackleg

In the discussion of the foregoing papers, Dr. Mayo suggested that since mature cattle are immune to blackleg, the research workers might well devote their attention to finding out why and to developing a sort of "old age serum" that might be used to protect young cattle.

The theory that mature cattle are immune to blackleg because of their age, was strongly refuted by Drs. Eichhorn, C. E. Stewart, R. F. Bourne, T. P. Haslam, P. Simonson, J. W. Connaway and others. The general opinion seemed to be that mature cattle are not immune to blackleg except in blackleg infected districts and that there their immunity is probably due to natural inoculation with blackleg organisms of low virulence or to their inoculation with a small number of the organisms, or in other words, that the immunity of mature cattle is an acquired one.

Blackleg Vaccine an Uncertain Product

Dr. Eichhorn stated that he believed that part of the losses following the use of blackleg vaccine was due to the crudity of the product, stating that "blackleg vaccine prepared by the government and also by private manufacturers in powder or pellet form is a very crude preparation. Some of the pellets may contain 100,000 or 1,000,000 spores while others may not contain any. This accounts for the losses after vaccination. The government is sending out blackleg vaccine in its present form because it is used in large quantities and further because it is readily administered by the stockman himself. The results, however, are not satisfactory because it is impossible to standardize spore vaccine in its present form and give an accurate dose to each animal. Anthrax spore vaccine is on the same principle. Heretofore in the vaccination against anthrax, a product was used which could not be standardized. It was a simple culture. It went out to veterinarians for vaccination, and it might contain spores and it might not. As a result under favorable conditions, these organisms kept on growing and eventually died out and the vaccine became inert, and those who used it lived under a false sense of security. Now we are able to eliminate the vegetative form of the organism from this culture. After these have been eliminated, we can count the spores and establish a definite number of spores in the c.c. These spore forms will retain their viability for an almost indefinite time under proper conditions, and, therefore, we can expect uniform results from the vaccination."

History of Black Leg Immunization

Speaking further on this subject, Dr. Connaway said:

"I should like to give just a little bit of history in regard to blackleg vaccination. I think it is due to a man who recently died in Kansas City, who at that time was the health commissioner of that city. I refer to Dr. Paquin, who was the first state veterinarian in Missouri and the first, I believe, in this country. Shortly after his employment by the university as professor of veterinary science and state veterinarian, he went over to France and while there he learned some of these methods while working in Pasteur's laboratory and other laboratories in France. This was back in the time when bacteriology was new. On his return he made the first blackleg vaccine that was made in America. I happened to be one of his assistants at that time and joined with him in this work.

"Later on the government took up this work, and the laboratories at Columbia abandoned it. One big laboratory is sufficient for making all the vaccine for the country, at least, I think so; and one big government laboratory can furnish it fresh, while a state laboratory might not have so much call for it in one state as the whole country would have, and some of it would naturally get old. One calf will

furnish a large amount, so the tendency to keep what one has and send out what one has on hand would exist, rather than to infect a new calf at frequent intervals and send out new vaccine. So the department at Washington furnishes new vaccine any time we need it. I have been distributing this in Missouri for a number of years, and I wish to testify to its uniformly good results.

Danger in Filtering Black Leg Vaccine

"We have had a few cases where we had to have re-vaccination, and in those cases I think it was the fault of the operator rather than the fault of the vaccine in that he filtered out the spores and injected the clear fluid instead of injecting the vaccine. In my directions, I tell them not to filter it at all, that is, if it is ground fine enough to go through the needle, and that is the way they furnish it. The purpose of filtering it was to take out the grosser particles so that it would go through the needle, but by using a somewhat large needle, say the size of a hog cholera serum needle, there is no need to filter it at all, but when it is filtered, it ought to be pressed with the pestle until the fluid is very cloudy after the filtration.

"Dr. Francis, of Texas, quit filtering the vaccine some time ago, because he found too many calves were lost by filtering it. Much of that work was done by farmers, and he told them not to filter it, and I have been following his lead in that matter, and we get excellent results. I think while these newer investigations are going on and until they are firmly established, that we have in the government powder form of vaccine a very efficient protective agent against blackleg.

Black Leg a Seasonal Disease

"I have kept a record of our blackleg vaccine distribution to see at what seasons of the year and under what conditions there was more of this disease, and I find two seasons which are associated with short grass. It is a sort of grazing disease. Particularly in the spring when the grass just begins to come up, calves are hungry for that green stuff, and they probably lacerate their lips and gums and get the infection that way. Then along in the fall of the year after the dry season and rains come and freshen up the grass, they again lacerate their lips and gums by close grazing. I think it is associated with close grazing and short grass."

Animal Tuberculosis and Its Effect on Human Health

At the night session held the first day of the meeting, the program was given over to a consideration of the subject of tuberculosis in cattle, dairy and milk inspection. The general public were invited to this session and the assembly hall at the St. Joseph Veterinary College where the meeting was held, was filled to capacity, 600 being in attendance.

The program opened with an address by Dr. H. DeLamater, Health Commissioner of St. Joseph, who discussed the great prevalence of tuberculosis in the human family and deplored the small and ineffective measures that are taken to prevent it. He mentioned several cases that occurred to his personal knowledge where children had been affected with tuberculosis through the milk of affected cows and complimented the veterinary profession upon what it had done in the recognition and control of tuberculosis among cattle.

Following this, those present were entertained by a lengthy formal address by Mr. H. F. McDougal, Editor of *Profitable Farming*, on the subject of "The Modern Milk Maid and His Devious Ways." Mr. McDougal was statistical and at the same time entertaining, and interspersed throughout his lecture were Scotch stories, which he told to the great amusement of his audience. Mr. McDougal asked that science and scientific men give greater importance in the formulating and enforcement of laws and in the formation of public sentiment which is necessary to the enforcement of any law. He said in part:

Progress in Sanitation and Hygiene

"Realization, agitation, education, legislation—these are the four steps in any reform and no reform will be enduring unless it takes its patient way thereby. The campaign for safe milk is in the first stage here, that of realization—realization that matters are indefensibly bad, that danger lurks in the daily food of the tiny children of the city, and that, unless we take active and constructive measures to eliminate the danger, we stand charged with being accomplices before the fact in whatsoever fate befalls these children.

Whiteness Does Not Necessarily Mean Purity

"The prime difficulty that any campaign for better and safer milk has, is our own inability to understand the fact that milk is not so blandly innocent as its stark, white surface would indicate. Bred upon the tradition that whiteness and transparency indicate cleanliness, it is hard for us to bring ourselves to the belief that beneath the chalky whiteness of milk there can lie danger. So long have we trusted the eye as our guide that we find it almost impossible to give up to science and its incontrovertible facts as regards foods and

drugs, although we do accept with intelligent readiness the facts of science as applied to the immense cannon, which are aimed, not by sight, but by higher mathematics and theory. That science can man a gun with enhanced effectiveness, we have to admit when we see the devastation wrought by batteries at incredible distances, but we quite ignore the score kept by science in the battle between disease and the babies of the land, and we hark back with stupid iteration to neighborhood traditions and old wives' gossip to combat progress in the science of conserving human life.

Science's Teaching Doubted Despite Its Triumphs

"It is this same science that is working on the milk problem and which is pointing out the dangers that lie in careless handling and wrong methods. It is this same science that has put an end to typhoid in the United States army where, since the introduction of science's vaccination against that disease which formerly was the terror of army movements, but one soldier has died of typhoid.

"We credit science with this victory, because we can see it from afar where the perspective is clear and we can view the achievement unentangled with our own biases and prejudices. But when it comes to the working of this science among us, we begin to question, with a strange obstinancy, its effectiveness, and we challenge its honesty. We look at it as something vague and mysterious and forget that science is only accurate knowledge applied in a common sense way.

"We all are scientists in one way or another, if we but call ourselves by that name, and we ought to be open minded enough to fellowship with these other scientists, albeit they are working along just a bit different lines. There is no mystery in their methods; it is just that we are not familiar with them. . . . . And so all that science says about milk, all the weird tales that the microscope unfolds, the funerals of little children, the stern facts that the doctors and health authorities know so well by repetition and constant association with them, are of no force and effect at all until you and I and our neighbors accept them with a full realization of their mighty significance and demand that all possible advantage be taken of them."

Mr. McDougal enumerated many humorous occurrences that he had observed in his campaign for better milk for St. Joseph and showed lantern slide illustrations of insanitary dairies and milk houses and of those of better structure. One of the former showed on one dairy farm supplying milk to St. Joseph where an ordinary old, tumble-down privy that stood by the milk lot had been converted into a milk house and was the building in which the milk was strained and prepared for the market. Both Mr. McDougal and Dr. DeLamater, who preceded him, paid the highest sort of tribute to Dr. A. E. Logan, pathologist in the St. Joseph Veterinary College and bacteriologist for the city of St. Joseph.

A Subject of Controversy

The meeting closed with a lecture by Dr. S. Stewart illustrated by lantern slides on the subject of vesicular stomatitis. This paper was discussed briefly by Drs. Eichhorn and Joseph Hughes.

At the session during the second day of the meeting, interesting cases that occurred in their practices were reported by Dr. R. P. Poage of Shelbina, Mo., Dr. W. E. Neil of Kirksville, Mo., and Dr. G. F. Jungerman of Hiawatha, Kans. These case reports with a summary of the discussion will be published later.

The Toll of Animal Disease

"The Actions and Control of Animal Parasites with Special Reference to the Intestinal Canal," by Professor R. P. Lyman, Dean of the Michigan Veterinary College, at East Lansing, constituted a valuable contribution to this important phase of veterinary practice. Dr. Lyman called attention to the following statistical facts. "In order to demonstrate veterinary responsibilities incident to agricultural progress, let us view the question from three angles: The value of animals, protection afforded and annual toll from diseases, and do this by quoting a few figures compiled from federal sources. First: On January 1, 1917, the total valuation of 206,318,000 farm animals in the United States reached a sum in excess of $6,685,020,000—$664,350,000 more than for the year just preceding. Applying these figures to Missouri and thus making my references immediately applicable, if you will bear with me, I will offer further comparative data based upon livestock and veterinary estimates within this, your own state. Missouri farms have approximately $269,454,000 invested in 9,726,000 animals (figures not yet available for the year ending January 1, 1917); without reference to animals commercially employ, to poultry or pets.

Loss of $100,000 Per Veterinarian

"Turning now to the second consideration; protection afforded through veterinary control. The last official estimate I have been able to obtain indicated some 11,652 practicing veterinarians or in other words, taking the figures above quoted, this means that each veterinarian has under his direct

care something over 17,707 animals, not including pets and poultry, and responsibilities aggregating a valuation of $101,700.91. Observe, if you will, the responsibilities upon our profession and as far as statements indicate these figures refer to both licensed graduates and non-graduates. Using this comparison and turning to your own state, we discover at the last report, 887 licensed practitioners which means that in Missouri one veterinarian is a guardian of 10,965 animals, valued at $303,730. You will, I believe, admit the great responsibility upon the profession.

Costs Millions of Dollars Annually to Board Parasites

"Third, the direct losses from various diseases in the United States for the year ending January 1, 1916, totalled, as near as can be estimated and it is probably low rather than excessive, the enormous sum of $222,850,000, divided among the various diseases and including something in excess of the conservative estimate of $15,000,000 from disturbances of known parasitic origin, without taking into account the indirect losses. Accepting the usual basis of a ten per cent loss (figures used by other states for a number of years), we can assume there is an annual sacrifice in each state of many millions of dollars due to animal diseases that can be brought under combatable control and by so doing render untold value to agriculture."

Dr. C. E. Cotton, of Minneapolis, Minn., President of the A. V. M. A., followed Dr. Lyman with an interesting discussion of sterility in cows and its treatment. This paper is published elsewhere in this issue.

About 150 veterinarians took lunch on the second day of the meeting with the St. Joseph co-operative club at the St. Francis Hotel and listened to a valuable address on the subject of community co-operation by the Hon. John Wunderlich, general secretary of the commerce club of St. Joseph. The ladies were entertained in the afternoon by an automobile ride about the city.

War Brings Need For Artificial Insemination

At the afternoon session, Dr. W. E. Stone of the St. Joseph Veterinary College, presented a paper on artificial insemination. Dr. Stone pointed out that there are most urgent reasons for veterinarians giving attention to artificial insemination and encouraging it in their localities because it will lessen the cost of breeding since it will require fewer stallions than where natural insemination is relied upon, that it will greatly improve the quality of the horses raised since it will enable the good stallions to impregnate something like ten times the number of mares they could do in the natural way, and to that extent lessen the need for stallions of inferior quality. He stated that artificial insemination is particularly advisable at this time owing to the fact that the importation of stallions from Europe is now stopped and cannot be resumed for many years, and because of this the demand for the services of good stallions in this country will be very acute.

Continuing, Dr. Stone said:

Estral Period Not Essential to Artificial Insemination

"There has been some discussion as to the time when the mating should be accomplished. Some have contended that only at the time of estrum should artificial inpregnation be attempted. When we take into consideration the fact that spermatozoa are abundantly supplied with nourishment and that its natural habitat is as much in the female as in the male—and that we do not know the exact time of ovulation, consequently we do not know when fertilization is accomplished—what is the difference whether the spermatozoa remain in the uterus a day or a week or a month? This is a great advantage artificial insemination has over natural service, which can be accomplished only at the time of estrum. By this method the semen can be deposited in the uterus at any time with the desired results.

Obstacles to Natural Insemination

"From experience we find that the mare will come in estrum in a few days after the capsule has been deposited; estrum will be of short duration, and period of gestation should be considered as beginning at this period of estrum. Again we find cases of sterility, such as faulty secretions of the vagina, can be overcome by this method. The normal secretions of the vagina are neutral in reaction, any deviation from this, either alkaline or acid will render the spermatozoa inert; under various conditions the secretions are rendered acid, this is very common in mares and can be overcome by irrigating the vagina using an alkali, such as bicarbonate of sodium. The mare should always be tested for acidity, especially the mare which is not a regular breeder; this is easily accomplished. Carry into the vagina a small piece of blue litmus paper, and when it becomes moistened with the secretions if acidity is present, the litmus paper will turn pink; the mare should not be bred until this condition is corrected; not even by artificial insemination for there is a possibility of carrying enough of the acid secretion on the capsule into the uterus to render the spermatozoa inert.

"Often we find lacerations which are the

means of interfering with the act of copulation. We find portions of the mucous membrane hanging from the roof or from the sides of the vagina. In many cases, no external or clinical symptoms are manifest. Where the laceration is small or where the projection that is hanging is small, no treatment is necessary, but if it hangs over the os uteri or is the cause of any irritation, surgical interference should be practiced before attempting to breed in the natural way; but in any of these conditions by artificial insemination, pregnancy can be induced, even though the laceration be so extensive as to communicate with the rectum.

"Another condition which we sometimes find in the mare, especially the one which has never been bred, is a closed os uteri. This is due, either to the fact that the os has no opening, or is covered by a membrane of such consistency that it cannot be torn with the finger. In conditions of this kind, a trocar has been attached to a hypodermic syringe and the seminal fluid has been injected directly through the walls into the cavity of the uterus and conception has taken place.

"Often in excitable mares we will find violent muscular contraction of the vagina following copulation, this takes place as soon as the horse dismounts, the mare will eject the seminal fluid and thus the service is rendered ineffective. Even in the most excitable mares a capsule can be inserted, and the work is accomplished.

The cervix of the uterus is normally prolonged posteriorly in a horizontal direction, but we often find the line to be deviated towards the roof, floor or sides of the vagina, or it may be flexed on itself so that the os uteri is projecting anteriorly instead of posteriorly. The abnormal condition precludes the possibility of conception from attempts at natural insemination while with the artificial method it is easily accomplished.

Opening Up Mares a Fallacy

"The stallion keeper has practiced for many years, what the layman terms 'opening' the mare before service. This has unquestionably done more harm than good, for in this condition, as we are told in the language of the keeper, 'the mouth of the womb is so tight that you can't push your finger through,' the mare is suffering from spasms of the os, brought about by the excitement of estrum, and the os in a moment after the keeper removed his hand, is in the same condition that it was before, except for the dirt and infection that the keeper has smeared over it; and the inflammation that his rough, soiled hand, manipulating a delicate membrane like this, is sure to set up. A capsule can, by gentle manipulation, in skilled hands, be passed through the os uteri with safety. The spasm of the os in a nervous mare is due to the presence of the stallion; by artificial insemination we avoid it.

Artificial Insemination Conserves the Vitality of the Stallion

"In many cases the stallion will be normal to all appearances, and the ejaculation will be normal in amount, but upon microscopic examination will be found to be devoid of spermatozoa. In artificial insemination it is always necessary to determine if the semen necessary to determine the amount of semen necessary to determine the amount of semen to use in a capsule and to regulate the frequency with which the stallion should be used.

"The microscopical examination can easily be made: The semen should be mixed with a little normal saline solution, as this tends to invigorate the spermatozoa to greater activity. Place a drop on a slide, and when placed under the low power lens of a microscope, the spermatozoa can be seen very plainly without staining. If the semen has been exposed to climate conditions for some time, the spermatozoa will be dead, but their presence can easily be outlined.

"Some attention should be given to the mare from which the semen is to be collected. Inspection should always be made to ascertain whether or not the mare is in a normal condition, and if the anatomical parts are in normal relation with each other.

Collecting the Semen

"The ideal mare from which the semen is to be collected, is the mare which has never been bred; but when it is not possible to get one of these, my second choice is a mare with a young foal.

"In time past, there has been many devices placed upon the market which at the time have been highly recommended, and the manufacturers would lead us to believe that these are indispensable, and must be used so as to perform this operation with success. Among these I might mention the breeders bag; various patterns have been introduced, some to slip over the end of the penis before copulation, and another to pass into the vagina and to remain during the act of copulation; the purpose of both being collection of the discharge of semen. I believe that more stallions have been ruined, and more live stock breeders have been rendered unalterably opposed to artificial insemination by the use of such abominable apparatus than by anything

else. They are unnecessary, impracticable and tend only to discourage this work. The more practical and the fewer instruments used the better the chances for success in artificial insemination. Often times no instrument whatever is required, for as is often the case with many stallions there is an escape of semen as the stallion dismounts, the veterinarian should be prepared with a sterile bowl to collect this and at once place it into the capsules and deposite them, without delay, in the waiting mares. Often it is possible to collect the semen from the vagina in an open capsule, and where only one or two mares are to be impregnated, this proves a very practical method.

The Modus Operandi

"The tail is bandaged, and the external genitals cleansed with soap and water, and allowed to dry. The only instrument required is the inseminator and some gelatin capsules which have previously been sterilized by placing them in a container covered with a piece of glass and allowed to stand in the sun for some time. There are various patterns of inseminators on the market. I prefer the all metal syringe with a flexible tube, the bulb of the syringe being rubber, and of a capacity of about six ounces. Before the horse is allowed to mount, the vagina should be irrigated with a normal saline solution, an antiseptic solution is contra-indicated, because of the danger of destroying the spermatozoa. Opinions vary as to the time of this irrigation; some believe it should be immediately before the service takes place; others contend it should be accomplished a couple of hours before service. I have tried both ways, and I find no difference, so I believe either way to be permissible. As soon as the horse dismounts after service, the operator should insert his left hand, carry it forward to the anterior part of the vagina, where immediately behind and beneath the cervix on the floor of the vagina, the semen will, in all probability, be collected. To aid in this collection, the fingers may be pressed on the floor of the vagina, causing a pitting for the semen, to collect. The inseminator is now introduced with the right hand, having previously expelled the air from the bulb, the index finger of the left hand should act as a guide for the nozzle to be directed into this pool of semen. The syringe is filled and the shield is screwed down over the nozzle before leaving the vagina.

"When a perfect service is accomplished and the semen passes directly into the os uteri, then the nozzle of the syringe should pass through the os uteri and with the index finger of the left hand bend the flexible tube, carrying the shield downward; then by gentle pressure on the horizontal bar of the syringe, a pitting will be formed in the floor of the uterus, and by allowing this to remain so for a few moments, the semen will collect in the depression around the nozzle of the syringe. Then by releasing the bulb with the right hand, the semen can easily be extracted. When the syringe is removed from the os uteri, the nozzle should be screwed down as previously described.

"The mares which are to be impregnated should previously have been placed in a barn or anywhere out of the sunshine, so when the semen is being transferred to the capsules it will not be exposed to direct sun light. Each capsule should be filled just before it is inserted, and the assistant who fills the capsules should hold the bulb of the syringe between the palms of his hands, to prevent a lowering of the temperature of the contents.

"There are several important points to be remembered in connection with this if success is to be obtained; namely the whole operation must be carried out as speedily as possible—the capsule must be pushed entirely through the cervix of the uterus—the instrument must be kept dry and sterile, and at body temperature, and be careful that no air be injected into the seminal fluid in filling the inseminator—the spermatic fluid must not be withdrawn from the vagina and exposed to the direct rays of the sun.

"I have capsule injected as many as ten mares from one ejaculation of semen, and had the mares been present, I could have impregnated that many more.

Difficulties With Jacks

"I find it more difficult to obtain semen following the service of a jack than it is following a stallion. One reason for this, I believe to be due to the fact that the ejaculated contents are more liquid than from a stallion. In the majority of cases when following a jack, I find it to be necessary to enter the uterus to obtain the seminal fluid. Even with this disadvantage, my percentage of successes has been much greater than my percentages of failures. Taking into consideration the general run of mares not including those that have been known to be non-breeders, for some years previous, my percentage of success, from all that it has been possible for me to keep any history of, has been better than seventy, and in the non-breeders the majority have been due to secretion acidity, and when I could treat these mares, my percentage of success has been equally as great, if not greater than the general run of mares.

"The future possibilities of this line of

work, depend wholly upon the attitude of the veterinarian. The door of success is open and bids him enter, will he do it; or will he allow this line of work to pass into the hand of the laymen and consequently come into disrepute?"

DISCUSSION

DR. F. F. BROWN: While we must confess that artificial insemination is no more apt to induce impregnation in a sterile mare than natural service, yet in a given number of mares in good health where it is possible to bring about conception, artificial insemination has an advantage over the natural service, because the service is a perfect service and the semen is introduced into the uterus. It must be granted in natural service that is not always obtained. I think one of the greatest advantages that will come from the use of artificial insemination is the care in selecting the mare to which the stallion is to be bred. That will be a great factor in the elimination of various diseases. I see in that the greatest good, and no doubt men who will practice it according to the directions will see a difference in the amount of venereal disease.

DR. CONNAWAY: Dr. Stone's restatement of some of these ancient things was well done, because I think this is a line of work that is very important. I am reminded that this method originated right here in Missouri and had its origin from human practice. Dr. McAlester, dean of the medical college at the university and whose practice was along lines of obstetrics and women's diseases, happened to be a great horse fancier and spent a lot of his money in raising thoroughbreds. He was familiar with the literature of women's diseases, and he knew that over in France a good many years ago there was a doctor from America, because some of the people in this country did not want him here. He happened to be a southern sympathizer and got into some place where they expatriated him—an Alabama doctor by the name of Marion J. Simms. He went to Paris and became famous for his work in female diseases. There was a married man who happened to have hypospadia. The opening was so far back that none of the semen could pass into the vagina. This American doctor being called in this case took an instrument and introduced some of the semen into this man's wife and she was happy thereafter and the man too, because they both wanted children. So Dean McAlester who had mares that were with difficulty gotten in foal, thought, "Why can't we do that?" So he proposed it to an associate of mine who was in the experiment station at that time. This was back in 1890. In 1890 I think the first colt was conceived by this artificial impregnation. It was done simply by the use of a medicine dropper. In this case, of course, the mare was a healthy mare. A man brought in two mares that were in heat to the owner of Charles Reade, and he did not want to serve both these mares that day, so one was impregnated artificially.

This is some of the old history of thirty years ago which has led up to the things of today. We did quite a lot of work among Dr. McAlester's mares. Several were artificially impregnated and in the neighborhood there was a jack breeder, some of whose jennies were not breeding well, and we helped him out. Dr. McAlester reported this in a horse paper and so the horsemen got hold of it, and some twenty-five years ago, I think, I talked about these things in the veterinary associations and veterinarians have been practicing these things ever since.

DR. W. B. WELCH: I haven't much to say, but I am not going to let Dr. Connaway take what glory there may be in priority in this proposition away from Kansas. He has absolutely got to prove dates because Kansas had this operation performed in the nineties and may be late in the eighties. This was done with the crude method of about a yard of hose and a funnel and a dipper and some milk—why the milk I don't know, unless it was to give the colt a start. The semen was caught in the dipper, poured into the funnel and siphoned down into the mare, and a colt was born and her name was "Proxy" and she was a fast trotter.

DR. C. E. STEWART: There are several points that have not been brought out, I believe. The rubber tube is not of very much account at this time. They are discarding this and using the instrument Dr. Stone described. This instrument is made for the purpose. The discussion seems to concern only the mare. We are not taking up the stallion side to find out whether he is a breeder or not. Dr. Stone said the semen should be examined but did not tell us what we might find by examining the semen. There is no question but that the semen can be seen under the microscope very easily, and there is a difference in the quality of spermatozoa. We find in a stallion who ejaculates a good semen, the spermatozoa are plentiful in number and are all headed in the same way, all going out and not losing any time. In others we find the spermatozoa moving slowly and only wiggling now and then. We find in others the sperm cells are turning with their heads together and they are ready to

die. The spermatozoa that are slowing up and barely wiggling along, are on their way to the mortuary. By making examination with a microscope, we can see whether the stallion has good semen or not. These things should be considered in the question of artificial insemination. There is a difference in stallions about serving. Some stallions will serve mares and deposit the semen directly into the uterus. That kind of stallion is a better breeder than one whose semen can be caught in a cup. In other stallions the glans penis becomes very large, and in descending they cause a suction that causes the semen to be discharged or thrown out. Such stallions are not good. Their semen besides being largely withdrawn from the mare is not so good for artificial insemination. Another thing is the temperature of the semen. Dr. Stone touched on that. The best results show that semen should be kept about 100 degrees—better there than at a lower or higher temperature. I don't mean by this that semen kept at 95 or even 90 degrees won't fertilize an ovum. I don't mean that semen at 101, or possibly 102, won't fertilize an ovum; but the best results are obtained when the semen is kept at a temperature of 100. The number of mares that can be bred from one good horse, theoretically, is only by the number of individual spermatozoa in his seminal discharge, the number reaches hundreds of thousands; but practically we can breed from one service about fourteen or fifteen mares. That is the average, sometimes more and sometimes less. During an entire season with the stallion in the proper attendant's hands, about 600 or 700 mares can be bred from one stallion by artificial insemination, and the percentage of mares that conceive from such breeding should be about ninety per cent. Thus the season get of a stallion under the most favorable circumstances would be about 600 colts. With the ordinary care, eliminating diseased mares, of course, about eighty per cent, or from eighty to eighty-five per cent, will get in foal. I have some statistics, I don't remember their source—that forty per cent of all the mares in the United States that are bred conceive; thirty-three per cent of the mares bred have colts at foaling time, and twenty-eight per cent that were bred have colts by their side at weaning time.

The X-Ray in Diagnosis

The use of the X-ray in veterinary practice was interestingly presented by Dr. H. E. Kingman, Ft. Collins, Colo. Dr. Kingman illustrated his remarks with numerous lantern slides and predicted for the X-ray a wider use in veterinary practice, commending it particularly for diagnosis and for the examination of fractures after the splints and bandages have been put on to see that there is a proper adjustment of the ends of the broken bones.

Anatomical Studies of the Teeth and Facial Sinuses

Dr. H. S. Murphey, Ames, Iowa, gave an extensive lecture on studies of the teeth and sinuses, including topographic anatomy of the interior parts of the head. This lecture was illustrated by a large number of splendid lantern slides from photographs and radiographs of specimens prepared by Dr. Murphey.

A Deserving Eye Remedy

"Dionin in Ocular Diseases," by Dr. C. J. Norden, of the American Veterinary Supply Company, Kansas City, was a subject listened to with attention by all present. Dr. Norden's paper had chiefly to do with the use of dionin in human practice, but a few results of its use in veterinary practice were reported. On the whole, Dr. Norden considers it a very valuable therapeutic agent for the treatment of various affections of the eye.

Dr. A. T. Kinsley, of the Kansas City Veterinary College, discussed the subject of corn stalk disease in cattle, which together with the discussion on it, will be published later.

CLINIC

The third day of the meeting was given over entirely to a clinic held at the clinical amphitheatre of the St. Joseph Veterinary College.

CASE No. 1. This was one of springhalt in a horse, which was discussed by Dr. L. A. Merillat, Dr. J. V. Lacroix and others. The operation for division of the lateral digital extensor was performed by Dr. Lacroix.

CASE No. 2. Demonstration of operation for fistulous withers by Dr. H. E. Bemis.

Nerve Blocking in Equine Dentistry

CASE No. 3. Explanation of the technic of local anesthesia of the dental nerves by Dr. H. E. Bemis. This was illustrated by means of the skull of a horse. Regarding this technic, Dr. Merillat said: "There have been some criticisms of the plan because its intent was not understood. The critics have said that no matter how a subject is anesthetized for dentistry, it will still put up opposition to the restraint and on that account the anesthesia is not worth while. Dr. Bemis' anesthesia is not intended for simple tooth filing or cutting off a tooth, or for other painless operations. It is for major dental work where we invade the region of the roots of the teeth as for example in the repulsion of a molar, whether it is maxillary or mandibular. In

order to control the pain of these operations, some form of anesthesia is essential, and everyone knows the dangers of chloroform for operations about the head on account of the danger of aspirating blood into the lower air passages.

When Dr. Bemis announced this system of anesthesia, it appeared to me as a splendid innovation to enable us to do the chiselling, pounding and invading the jaws of horses without any pain whatever, and that is just exactly what one can do with it. We can cut large grooves in the soft tissues and pound and drive the tooth without causing the animal distress. There is no doubt but that the system has been helpful. It is also helpful in our surgical work in the infraorbital foramen. Everyone knows when we invade this region we are running up some of the radicles of the superior maxilla branch of the trigeminal. With this anesthesia, we are able to trephine in the premolars without causing any pain whatsoever."

CASE No. 4. Castration of horse in standing position.

CASE No. 5. Demonstration of tuberculin reaction and injection on a cow by Dr. L. D. Brown, of St. Joseph, Mo.

The Thermo-cautery for Roaring Operations

CASE No. 6. Cauterization operation for roaring by Dr. Geo. B. McKillip of the McKillip Veterinary College, Chicago.

DR. MCKILLIP: In our operation for roaring, we have two methods of restraint, one the decubital and one the standing. When we cannot place the horse on a table, we generally do the operation in the standing position. In the standing position we anesthetize our patients partially with chloral hydrate and giving it by the mouth an hour before the operation. The patient then can be put in a stock or stall with the head elevated. A little trick in the restraint is to be careful not to raise the head too high. Patients will resist the restraint if the head is too high. Now when we have the head up and the patient standing we make the incision through the skin going well forward and cutting backward four or six inches through the sterno-thyro-hyoideus muscle, which will bring the larynx into view. With our scalpel we pass up the ligament and go forward to the thyroid, and with our dilators spread the larynx. Once we have exposed this, we locate the ventricle in the lumen of the larynx. Once we have that, we can use the iron. We used the electrical iron here today. We have another iron that we can heat with a blow torch. We allow the iron to remain five or ten seconds, then withdraw, and it needs no further treatment except sponging off.

The Fate of the Prize Winners

CASE No. 7. Cow for diagnosis by Dr. Joseph Hughes.

DR. HUGHES: I have been asked to examine this cow with the object of determining as to whether she is affected with actinomycosis or tuberculosis. This is not an impossible thing. At the same time it is very easy to make a mistake. In this cow we find an animal that is well nourished, her eyes bright and she is in good condition. At the same time one might have said the same of the champion steer in Chicago some few years ago that people came for hundreds of miles to see and admire, and afterwards when they sold him at $1.50 a pound and then slaughtered him and opened him up, they had to throw the carcass into the offal tank because of tuberculosis infection. About four years before that, the champion steer met with the same fate. Consequently, outward appearance so far as tuberculosis is concerned, does not cut much of a figure.

Characteristics of Actinomycosis

Here in this animal we have an enlargement, a hard tumor or endoplasm that is not fluctuating at any point. It is located immediately under the skin in the cellular tissues. It is smooth upon its surface: it is not lobulated; it is not irregular. Ordinarily tubercular masses, both in man and in the animal, are not of this smooth character. They are rather of the lobulated order. If this were tuberculosis, also instead of its affecting this particular part here, it would be much deeper seated in the lymph glands, what we call the upper cervical glands, and they are located much higher up than this enlargement. The ray-fungus which causes actinomycosis is generally supposed to be admitted through the alveoli of the teeth, and its tendency is as a consequence to affect animals during the stage of teething, when the surfaces of the gums are raw and exposed. Here in this cow we find two incisors that have not yet come through. When these incisors are coming through and the molars also, there are raw surfaces. These actinomyces enter through these raw surfaces, follow the lymph spaces and ordinarily lodge somewhere, perhaps in the tongue, perhaps in the bones of the head, perhaps farther down in the body. As a rule you find them confined to this upper part. The fungus microscopically is so large that it quickly becomes arrested in its course and does not travel very far away from the point of entrance. The result is that here it multiplies in the tissue. It does not produce pus unless the skin becomes broken and bruised and a mixed infection occurs. Organisms of the staphylococcus and streptococcus

order then can get in, and we have a suppurating abscess or tumor, but as long as the mixed infection does not occur, there is no suppuration. Here in the bones of the head, the ray-fungus causes a rarefying osteitis. The bones become soft and spongy and after a while infection is bound to occur.

The Transmission of Actinomycosis

The question may arise as to the communicability of this disease from cow to cow. Personally, I do not believe that it is communicated in this fashion. The fungus is an organism that is to be found in connection with cereals. The tubular character of hay and straw makes an excellent hiding place for this organism, and it is from these grasses that in my opinion it is communicated to the animal. The disease for the last thirty years has been looked upon as one that is communicable to man. Personally, I do not believe it. I believe that man contracts the disease, when he does get it, just the same as the animal does, not from the consumption of the flesh of the actinomycotic animal, but rather from the same source, whatever that may be; that is, he is immediately infected from the cereals. Some years ago the United States government took up a system of experiments with regard to actinomycosis and as a consequence purchased about 600 animals in various stages of the condition with the object of subjecting them to medicinal treatment. I want as a consequence to discuss the therapeutic treatment of actinomycosis.

An Experiment in Treating 600 Cases of Actinomycosis

I had the honor and pleasure to be one of those that were requested to post these 600 animals when the government decided to destroy them, and we found some of the most marvellous results developed as a consequence of the therapeutic treatment to which they had been subjected. They were given during six to eight weeks from one to two drams of iodid of potash, and the fistulous tracts on the jaws and in the necks about the throat, had dried up and the neoplasm itself shrunk and completely disappeared in many cases. It shows the value of iodin treatment in actinomycosis. I do not know whether if it had been persisted in long enough it would have effected cures, but my opinion is that it would. We found large tracts that were dried up and no other treatment had been applied, so that iodid of potash given in dram doses is effective in this condition. In that connection I might state that cattle are peculiarly susceptible to iodid of potash. Any one who has been in the habit of using it knows that he must be careful in giving it to pregnant animals as abortion is very likely to result. If you give dram doses of iodid of potash to an animal for two or three weeks, you will find that the surface of the body raises itself and cracks, and if you pass your hand over the surface of the body, it crinkles like tissue paper. This results from the desquamated epithelium on the surface of the body, and when you approach that stage, it is time to let up on that form of treatment.

Now I fail to find any evidence of enlargement of the glands such as one might expect in tuberculosis. I find no swelling or enlargement of the guttural glands or the intermediary glands in the course of the jugular field. The other glands of the body are so deeply seated that it is not possible to palpate them. I am obliged to say that this is a case of actinomycosis and not a case of tuberculosis.

Causes of Abscesses in Cattle

CASE No. 8. Another cow for diagnosis by Dr. Joseph Hughes.

DR. HUGHES: Here we have another cow that shows a scar, which would rather tend to indicate that the tumor might have been removed. At the same time I find that the scar tissue extends deeply into the region of the pharynx, in the region of the upper cervical glands. It might be that an abscess developed in these glands, and we find these glands affected in tuberculosis, especially in young animals. We find them in calves and yearlings, particularly of the pure-bred species. The animal then shows all the symptoms of roaring such as we find it in the horse, making a sound that we can hear for an indefinite distance. I do not need to say that all of these affections or infections of cattle indicate tuberculosis. We may have other infections that produce such abscesses here independent of tuberculosis. All the same, it makes one strongly suspicious. When we see a cow showing an abscess or two or three abscesses, we do not conclude that that cow has tuberculosis. There was a time when we used to and wondered why she should be allowed to remain in the herd. However, abscesses may be developed from other causes, and here in this case I would conclude then this was rather an abscess than a tumor. I would imagine this could be readily removed surgically.

CASE No. 9. Horse with fistulous withers operated on by Dr. L. A. Merillat.

Radical Operations for Fistulous Withers

DR. MERILLAT: This case is a horse affected with fistulous withers for some four years, and such a horse is not a good subject with which to demonstrate any stand-

ard routine measure of treatment. The fistula seems to have spent its force. The horse has been subjected to all kinds of treatment for four years, including cauterization. The operation for fistulous withers ought to be preceded by a cleaning up process. Because one is working in an infected area, it is possible to add new infection. The adding of new infection to old infection multiplies the trouble because the horse's withers are automatically vaccinated against the infection he has, but if a person comes along and opens up new avenues and causes infection with instruments and hands, it sets up a new process, so it is advisable to do an operation of this kind just as clean as one can. We make here a median line incision and attempt to drain it. Very likely there are no distinct cavities here on account of the age of this lesion. A wound like this could be taken care of without any drainage. However, I will insert a drainage tube and demonstrate the drainage tube insertion. I would not sew up a wound like this. We can very easily control them by packing with gauze. If one does sew up a wound as dirty as this, it should be opened in fifteen hours or so. We are asked a great deal about the application of drainage tubes to fistulas. That instrument can be put down to any depth desired. The idea is to get to the bottom of the hole. A drainage tube of that kind is handled like a seton. Veterinarians have objected to drainage tubes because they close up. It is to be handled roughly and pushed from side to side and cleaned, working it back and forth like a seton, and then you will not find that you have any trouble in keeping a drainage tube working. By fixing a spike in it or tying a string to each end, they do not slip out. Just see how roughly you can handle that tube; pull it back and forth and keep it working, and the central cavity will stay dry. There will never be any pus in it.

Acute Navicular Disease

CASE No. 11. Lameness in a horse for diagnosis.

DR. HUGHES: We have a case of lameness here to which I should like to draw your attention. Here is one of those cases that I love to bring in before a body of students, have the horse standing on the floor and allow him to do the talking. The maneuvers of this horse will most readily tell you where the lameness is and what part hurts. Now, gentlemen, I want you to watch him. Trotted he is lame in one leg and lamer in the other. Bringing him to a standstill he is constantly shifting. First of all, he will show volar flexion and then he will get one limb back underneath the other, projecting the other and reverse the motion. Now ,the question rises, what part of this horse's foot hurts? Pick up this foot and look at it, and you never saw a better looking foot, great big frog, normal size and all that, and still at the same time this horse is lame, and lame in the feet. What structure is at fault? He is lamest in the left foot, and that might raise the question—where does a horse point with navicular bursitis, which this horse has? If you were to bring that limb underneath the body, it would support more weight than it could stand. As the perforans tendon there is underneath the navicular bone, the more it approaches forward, the more it diminishes that angle and the more it takes the pressure off.

Parts Involved in Navicular Disease

What is navicular disease? It is a condition affecting three structures, the navicular bursa, perforans tendon and navicular bone. Which of these structures becomes involved before it is detected? The most delicate one is the bursa. A synovial bursa is an extraordinarily delicate structure. It is susceptible not only to strain but to inflammation from any cause. We have a case here of inflamed navicular bursa, and this would also involve the tendon. We find that the tendon participates, in my opinion, secondarily in this disease. When a navicular bursa becomes inflamed, we get a dry stage, in which the secretion is suspended. The bursal cavity becomes dry and the dryness of the part produces friction. That causes an extension of the inflammation from the bursa to the tendon and later on to the bone. If the condition persists and becomes more or less chronic, which I would expect that it is here, we have all the structures involved, and as a consequence, while we might look for a cure if the disease was limited to the bursa, it is a very doubtful matter if with the three structures involved here we can look for a cure by any other means than neurectomy. In the stage of bursitis, we might take the shoe off, pare the foot, shorten the toe, put on a pack consisting of two thicknesses of absorbent cotton overlaid with a thickness of oakum and then put on a bandage and wet it, keeping the horse in a box stall and keeping the bandage constantly soaked. We do not need to use a trough of water so long as we can use packs and keep the horse in a constant soak. If a man will do this for two, three, four or five weeks, he will be astonished to find that the horse will go pretty well without blistering, by merely applying moisture to it; that is, in the incipient condition

of the disease, incipient navicular bursitis. When it has progressed beyond that, we cannot hope to obtain any success from that treatment or from any treatment, except in cases of long standing, we sometimes have a spontaneous recovery from adhesion of the navicular tendon and the navicular bone. Many who have had experience in the dissecting room must have seen that. These horses go without lameness, and it is not infrequently found that old standing cases recover spontaneously.

DR. COTTON: If you soak this animal six weeks and he recovers, how long before it will recur again?

DR. HUGHES: Some of them do not recur again, provided they are shod properly. Remember I alluded to a case of incipient bursitis before the disease progresses until the bone is involved. Any one who has observed the progress of navicular disease has observed the secondary changes that affect the tendon. The tendon is glazed over with what looks like a thin cartilaginous covering. In a short time that glazing disappears and the tendon commences to fibrinate. In the meantime you will see little yellow spots appear on the surface of the navicular bone. If it gets to that stage, this treatment is of no avail.

CASE NO. 12. Lameness in a mule for diagnosis by Dr. Hughes.

DR. HUGHES: Here we have a case of navicular disease in a mule. I am making diagnosis without any local anesthesia. Here is a brute that is stubborn enough not to show much. He is lame in the right front limb. The lameness here is the same as in the horse we have just examined.

Question: What neurectomy is best in cases where neurectomy is indicated in navicular disease?

DR. MERILLAT: In working horses we are using median neurectomy almost exclusively, and while it is not always effective, it is generally satisfactory enough. Median neurectomy is never harmful. There are never any of the unfavorable sequellae that go with the high operation.

The Occurrence of Neuromas

DR. HUGHES: Singularly, we do not get these neuromas or little tumors that are extremely sensitive that form on the end of the nerve—we never get them from median neurectomy. My recollection is that before we got the local anesthetics, cocain, stovain and other anesthetics, we did not have the proportion of neuromatous growths that we have today. Again we rarely use a local anesthetic in the median operation, and I never saw and I do not believe any one else ever saw the neuromatous growths there.

DR. MOORE: I never had a neuroma form since I quit dissecting for these lower nerves. I make a very small incision and then simply cut in enough to get the neurectomy hook in and pick up the nerve. The incision is so small that it heals over in twenty-four or thirty-six hours, and I have not had any trouble with neuromata. After performing this operation, one would pass the horse for sound unless the scar was especially looked for. I should like to ask what is the cause of degeneration of the digitals of the foot after plantar and digital neurectomy.

Degenerative Changes Following "Nerving"

DR. HUGHES: My only explanation why some of our cases go wrong and some do not, is on account of the distribution of these nerves, and we divide them in some cases so that the vessel goes rampant, nutritive control does not exist, and that is the only explanation I can give theoretically.

DR. MOORE: Dr. Hughes' explanation coincides with my own in the matter, and figuring from that standpoint, I made up my mind that the real cause then was in the destruction of the nerves that control the size of the vessels and allowed too much blood to remain in the hoof, allowed the vessels to become dilated and the circulation slowed up, and eventually degeneration followed. On that theory I wondered why we could not overcome it by pressure. I would try to support the tissues here artificially. We had a rubber stocking made to buckle around the hoof and lace up in front on the hoof so I could draw it up tight, on the same basis that a stocking is applied in the case of varicose veins, believing that this would overcome the trouble. I never had an opportunity to try this but once. The stocking was taken off when the horse was taken out to work and put on when she came in, and the foot remained sound. At that time I did not need the horse any longer, and we sold her, and in thirty days after she went to the country without that stocking she sloughed the foot. It is the only case I have to report here on that line, but I believe it would be worthy of further trial.

CASE NO. 13. Operation for inguinal hernia in a bitch by Dr. Geo. B. McKillip assisted by Dr. J. V. Lacroix.

Occurrence of Hernias

DR. MERILLAT: This case is an inguinal hernia of a bitch which is quite a common disorder of this animal. The case is met with frequently by men who have a large

dog practice and might come within your province some day. This hernia was about two inches long and about three-fourths of an inch wide, letting down the contents of the abdomen. Nearly all of the important viscera was in the hernical sac. The reason this is interesting is because it is the hernia of human beings, the hernia that a man has when he ruptures himself. In quadrupeds excepting the dog, this is a rare hernia. You know there are two scrotal hernias, the scrotal hernia in which the sac is the tunica vaginalis and another scrotal hernia which is interstitial. Here in the dog we have the inguinal form of hernia the same as in human beings. The hernia was reduced by manipulation and the skin sutured over. The reason I wanted to say this about hernia is that it is well for the veterinarian operating on scrotal hernia to keep this in mind because if he does not, it is possible to take the contents of the interstitial hernia believing it to be one of the other kind and reduce it back through the inguinal ring and cause a strangulation from the operation. A great surgeon confessed once that he did that thing to a horse and found it on autopsy.

A New Anesthetic Device

Mr. George M. Dorman, a junior student at the St. Joseph Veterinary College demonstrated a new device for giving anesthetics, which he has invented and had patented. He explained that it had three containers for ammonia, ether and chloroform and that all three could be administered or any of them withheld and replaced with air. No heat nor extra pressure was necessary to convert the liquids into vapor, but by means of the patient's own inspiration, the air passing through the liquids transformed them into vapor.

A photograph was taken of the members and visitors in front of the college building at noon, and luncheon was served for the ladies in the chemical laboratory, while the men had box lunches in the auditorium.

The sudden death of Dr. D. O. Knisely at Topeka, Kansas, was announced during the clinic, and a resolution was passed expressing the regret of the association and extending condolence to the family of the deceased.

Operations for Recto-Vaginal Fistula

Dr. Moore described a new operation for recto-vaginal fistula in mares as follows:

These cases often occur in mares when foaling, where the rectum and vagina are torn together; the upper commissure of the vagina and rectum become one common opening. Most of you who have had experience in this will agree that they are pretty hard cases to overcome. I find the great difficulty is the stretching of the stitches here due to defecation. It will tear out almost any stitches that can be placed in the lower surface of the rectum. I think I am overcoming that very nicely by a very simple operation and one you only need to have your attention called to.

The whole process lies in dividing the sphincter ani at the upper side of the rectum. Simply cut through the anus upward clear to the root of the tail, so that the whole posterior end of the rectum superiorly is opened up. That allows an abundance of room for suturing, and you scarcely need a needle holder to suture up a bad recto-vaginal fistula. The second advantage is that during defecation the sphincter ani cut in two at the upper edge takes the strain off the suture and overcomes that trouble at once. I believe you will find with this you will succeed nicely.

Of course, in suturing any fistulous tract or any cicatrized wound, you must scarify the tissues. Scarify the wound carefully, and after you have made the incision in the sphincter superiorly, spread it; then suture together as you would any other wound and with antiseptic treatment in a few days that will heal and the strain is taken off the sutures during that healing process. The question may arise as to what will become of the sphincter. That will unite of its own accord. You need no treatment at the upper commissure because granulation will soon close that down into its normal place. The upper part of the anus does not become contaminated with fecal matter to any extent, and in two or three months you will find the sphincter is healed and the mare is cured.

You should always anesthetize for it because when you begin to operate here the animal begins to strain, and the forcing of fecal matter out during the operation obscures the field. The sutures should be put close together, and out of the way as far as possible so there will be no danger of material from the rectum working into the wound. Just keep that in mind and I believe you will overcome this difficult proposition, which is one that we have dreaded, and a great many of them have been let go because we could not overcome them without serious trouble.

Question: What do you use for sutures?

DR. MOORE: Any good suture material, something that will stay in that case. You do not need so much strength because the strain is taken off.

Forty-four new members were admitted to the association during this session at St. Joseph.

STERILITY IN COWS AND ITS TREATMENT

(*Continued from page* 228)

work as rapidly as I can. I have done quite a little of it in Iowa, and just like him, I am very enthusiastic about it, and I think his presentation of it in the paper and his illustration of the method of handling and pulling down the uterus so that it can be examined and so that there will be no mistakes made in the examination, is very full and complete. I do not believe there are any of us here who can afford not to make a study of the paper which he presented and be prepared to follow up this method, which has been developed by Dr. Williams and which is being taken up by the veterinarians, or should be taken up by them. I think that the handling of the uterus according to this method is going to solve a great many problems which we have over and over again in regard to the proper irrigation of the uterus in cases of retained placenta where the cervix is closed but the placenta and purulent material are still being retained. I think that the uterus in that condition should be irrigated, but it should be irrigated only in this way or in some other way in which it can be carefully irrigated with a mild antiseptic solution, possibly followed with normal salt solution, after which every bit of that fluid must be taken away. You can do it and be absolutely sure of it. You can fix the uterus and pull it down, introduce the irrigating tubes, the return flow tubes, using the large or small one according to the size of the cervix, and with the other hand in the rectum, palpating, massaging and pressing the uterus, you can be sure that all of that fluid comes out of the tube. After such handling you can be sure that the uterus has been carefully and thoroughly irrigated and properly prepared, and I believe that is going to take care of much of the sterility we have today.

In regard to the diagnosis of pregnancy, any one who gets into this work, will have a lot of that to determine. As Dr. Cotton said, a great deal of this is in cows that are irregular breeders. The cows may be in heat after they conceive, and they may continue to come in heat regularly or irregularly during the period of pregnancy, and if we assume simply because a cow is in heat that she is not pregnant, we may make a mistake and cause abortion. I have felt that I could diagnose early pregnancy, not by feeling the fetus itself, but by the size of the horns. You know that one horn is gravid and the other non-gravid. When the fetus begins to develop, the gravid horn is more vascular, rounded out and full, while the non-gravid horn is more or less

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of a tube. Now with the gravid horn, the uterus is pelvic in position and you can run your hand in and find one rounded out and the other side nearly normal, so there is the diagnosis of that in conjunction with the uterine seal and the increased pulsation of the artery. Later as the calf gains size, of course, it will weigh the uterus down. Then as Dr. Moore says, the uterus is weighted down, but what is it weighted down with, a tumor or the fetus? In order to determine that, you must palpate the uterus. The fetus can always be felt as an angular body, and you can easily palpate that body in the uterus through the rectum. You can palpate a tumor by its size, form, etc., and you can determine pus in the uterus simply because it is so much fluid hanging in the sac.

Before I started on this work, I was skeptical about it. I had made two or three rectal examinations and could not feel anything. I imagine there may be many of you that may be in the same predicament if you are new in this work; but the more rectal examinations you make, the more you can feel until you come to the time when you can locate the ovaries very quickly, handle the horns and do just what Dr. Cotton said in his paper. I am simply saying this to encourage veterinarians to take up this work and do it carefully because it is going to give splendid results. It is up to us to meet this problem of sterility.

DR. MOORE: Is the os always closed in pregnancy?

DR. COTTON: Yes.

DR. MOORE: How do you account then for superfetation?

DR. COTTON: I cannot answer that.

DR. MOORE: If the os is always closed during pregnancy, how can we account for superfetation, that is, an animal becoming pregnant while already pregnant? We have cases on record where mature calves have been delivered as much as three and four months apart. I think that Fleming cites at least one case where there was a perfectly formed calf dropped in July and another one in October. Now if that is the case, and there does not seem to be any doubt about it, how does impregnation take place with a sealed os uteri?

DR. COTTON: There are exceptions to all rules. You know how easy it is usually to produce an abortion the moment you let air into the uterus.

DR. BOURNE: This question has oftentimes been propounded to me and I have an explanation, that is, a theory. My theory is that that uterine seal while it is apparently perfect nevertheless may not be perfect under stress of excitement during which that os perhaps temporarily undergoes relaxation. It does not take much for an additional sperm to make its way through that seal.

DR. HUGHES: With regard to this uterine seal, I believe that it is formed very promptly after conception. I believe that it remains practically perfect as a rule all the way through. I have never examined a pregnant uterus where it is not present. It is a yellow, coagulated, tenacious material. It blocks absolutely like a cork the cervix. It is formed by cells that are within the cavity of the cervix and partly by the granular structure partly within the cervix in the uterine cavity. Consequently, it starts to form very early. One of the ways by which it can be recognized is to take an equine speculum, introduce it and examine the uterine seal. That can be done without in any way handling or touching. Personally, I do not like to touch that seal, especially in valuable cattle. I do not believe that one should go in with the hand and explore in order to determine if that seal is there.

GENESEE VALLEY VETERINARIANS MEET

The twentieth annual meeting of the Genesee Valley Veterinary Medical association was held at Rochester, N. Y., on January 25th. The following officers were elected for the ensuing year: President, O. B. Webber, Rochester, N. Y.; vice-president, F. E. Cleaver, Avon, N. Y.; secretary-treasurer, J. H. Taylor, Henrietta, N. Y.; censors, J. E. Smith, W. J. Payne, J. W. Turner, H. S. Beebe, Warren E. Stocking, A. Geo. Tegg and W. G. Dodds.

Dr. H. S. Beebe read a paper on mammitis in which he reported some of the results obtained by Dr. Frost of the New York State Veterinary College from the use of formaldehyde. Very gratifying results were obtained in five or six cases treated. The drug was given in about 25 cc. doses well diluted in milk or oil and was found in the milk within seven hours after administration.

Dr. W. H. Salisbury, of Clifton Springs, presented a paper on contagious pleuropneumonia, which was followed by an instructive discussion.

Dr. F. E. Cleaver read a paper on retained placenta, which brought out a spirited discussion and revealed the fact that there is no subject on which good men differ any more than in the treatment of this condition. Yet the discussion proved that we are rapidly coming to one point of view, and I believe within the next three years, there will be a great improvement in the methods employed for the relief of this disease.

At the conclusion of the program, a din-

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ner was given by the association, which was enjoyed very much, but most of all, those present enjoyed the social time, which is really one of the most important features of a veterinary meeting. The attendance was not large, but it was one of the best meetings ever held by this association.

Henrietta, N. Y. J. H. TAYLOR, *Secretary.*

THE NORTHEASTERN INDIANA VETERINARY ASSOCIATION

Avilla, Ind., February 13th, 1917.

The regular annual meeting and clinic of the Northeastern Indiana Veterinary Association was held at Muncie, February 13th.

The afternoon was given over to the clinic at Dr. O. L. Boor's hospital. A number of operations and demonstrations were performed; among these, demonstrating the single rope method of raising an animal, by C. C. Dobson; radical operation for poll evil by Dr. Boyd and Dr. Hadley; operation on dog, by E. D. Leach; operation on a broken shoulder on a horse, by Dr. Boyd; ovarotomy, Dr. Boyd.

After the clinic a fine dinner was served at the Delaware Hotel. The meeting was called to order by Dr. Stoker, president. The minutes of the last meeting were read and approved. A motion to revise the mailing list and by-laws was carried. Paper by F. A. Bolser, read by Dr. Rogers, on differention diagnosis of hog cholera which resulted in much interesting discussion, and many important points were brought out. A paper by Dr. Boor on proposed legislation was read and heartily endorsed by those present.

Applications for membership received: C. C. Allen, Selma, Ind.; Claud Weber, Oakville; C. C. Sheiler, Eaton; F. A. Moore, Gaston; J. C. Rodger, Anderson; C. C. Dobson, Muncie.

The next meeting to be held at the Wayne Hotel, Ft. Wayne.

R. H. BOYD.

LIVE STOCK AND VETERINARY LEGISLATION IN NEBRASKA

A bill prescribing regulations for the manufacture and distribution of anti-hog cholera serum is under consideration by the Nebraska legislature. This bill is similar to one passed two years ago and held unconstitutional by the supreme court of Nebraska. The provisions objectionable to the court have been eliminated.

A very comprehensive tuberculosis bill is being considered also. It prescribes that only licensed persons may use tuberculin. An examination is required to obtain a license. It is aimed primarily to deal with tuberculosis in cattle, but includes swine also in its provisions. An important provision of the bill is that all female cattle and bulls shipped into the state without a tuberculin test chart, showing them free from tuberculosis shall be automatically quarantined until they are tested or shipped to market for immediate slaughter.

Another bill introduced to the Nebraska legislature prescribes the duty of farm demonstrators, and confers upon them the authority to make tuberculin tests. This bill is not likely to be enacted.

The Nebraska legislature also has under consideration a bill raising the salary of the state veterinarians from $2,400 to $3,000 per year. It will probably pass. It also has under consideration a bill establishing a research department in connection with the Agricultural College, and provides for the discontinuance of anti-hog cholera serum at the college.

WYOMING ENACTS STALLION REGISTRATION AND TUBERCULIN TEST LAWS

The recent legislature of Wyoming enacted a law requiring the registration of all stallions and jacks in the state with the state veterinarian. Permits to stand such animals must show their breeding and their unsoundness if any and the name of the veterinarian that examined the animal. Only graduate veterinarians licensed in Wyoming may make examination of stallions for registration.

A tuberculin test law was also enacted. It provides that no products can be sold from a dairy except all the cows therein have passed the tuberculin test. The enforcement of the law is placed in the hands of the state veterinarian and he is authorized to employ a deputy to have general supervision of the testing.

OHIO VALLEY VETERINARY MEETING

The Ohio Valley Veterinary association held its annual meeting February 13th and 14th, with a much larger attendance than usual. The papers read by well known veterinarians were of unusually high class, and the clinics on the second day of the meeting gave a large variety of operations and were most instructive.

Tuesday night, February 13th, a banquet was given by the Terre Haute Veterinary College, complimentary to those attending the association and a general good time was enjoyed by all. Mr. J. S. McLaughlin, representing the Abbott Laboratories, Chicago, was chosen toastmaster and toasts were responded to by Dr. T. A. Sigler, Greencastle, Ind.; Dr. G. H. Roberts, Indianapolis; Dr. F. A. Baker, New Castle; Dr. Webster, Terre Haute; Dr. A. F. Nelson,

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state veterinarian, Indianapolis, and Mr. Swayzee, Indianapolis.

The visiting ladies were entertained with a banquet at the New Deming hotel and a theatre party afterwards. They organized a ladies auxiliary with Mrs. Walker France, Oakland City, president, and Miss Ramsay, Terre Haute, secretary.

The summer meeting of the association is to be held at Oakland City in July. The following officers were elected for the coming year:

G. P. Isabel, Hopkinsville, Kentucky, president; C. F. McKinney, Vermillion, Ill., first vice-president; John J. Fasser, Salem, Ill., second vice-president; C. D. Bailey, St. Elmo, Ill., third vice-president; C. S. Henry, Terre Haute, Ind., secretary, and B. F. Stahl, Oblong, Ill., treasurer.

Terre Haute, Ind. C. S. HENRY, *Secretary.*

DOCTOR D. O. KNISELY DEAD

During the clinic at the meeting of the Missouri Valley Veterinary Association at St. Joseph, a telegram was received announcing the sudden death of Dr. D. O. Knisely, of Topeka, Kans. Dr. Knisely was born at Mechanicsburg, Pa., on January 1, 1868. He was educated in the common schools, attended the Campbell university at Holton, Kans., and the Chicago Veterinary College, graduating from the latter school in 1892. During his student days he worked first for Dr. R. C. Moore, now president of the St. Joseph Veterinary College, and later with Dr. Geo. C. Pritchard, with whom he became associated in practice after graduation. This partnership continued until about five years ago, when Dr. Pritchard retired and Dr. Knisely took over the entire management.

Always of a congenial personality and of marked professional ability, Dr. Knisely bound his friends tightly to him and prospered largely in practice, always retaining the confidence of his patrons to a remarkable degree.

Dr. Knisely is best known among veterinarians for the advocacy of the stomach tube. Dr. Knisely was not the first to use the stomach tube on animals. That distinction probably rests with Dr. E. L. Quitman of Chicago, who first used this contrivance for the relief of gastric flatulence more than twenty-five years ago, but to Dr. Knisely is due the credit for popularizing the stomach tube. An early convert to its usefulness, he attended veterinary meetings near and far and demonstrated the use of the tube at the clinics. He visited most of the veterinary colleges of the country ten or twelve years ago and demonstrated this tube before the classes. He was a frequent contributor to the *Missouri Valley Veterinary Bulletin* and later to the AMERICAN JOURNAL OF VETERINARY MEDICINE, almost always discussing the uses of the stomach tube.

Not being satisfied with the results obtained from the tube made after the plan of that used in human practice, he designed the one that bears his name—a double current tube, that permits a simultaneous inflow and outflow and is widely used in this country. Although introduced by Dr. Knisely but little more than a decade ago, the popularity of the stomach tube has grown so rapidly that there are now few practitioners who do not possess one. The use of the stomach tube has improved greatly the average of the treatment of digestive ailment in horses. The value of the animals saved by the use of this device must reach well into the millions of dollars, and as stated, almost the sole credit for its introduction is due to Dr. Knisely.

The deceased leaves a widow, a daughter and two sons who live in Topeka.

COLORADO VETERINARY MEDICAL ASSOCIATION

The annual meeting of the Colorado Veterinary Medical Association was called to order in the rooms of the Gentlemen's Riding and Driving Club, Denver, Colorado, at 10:45 a. m., January 25, 1917. In the absence of the president and the first vice-president, Dr. R. H. Bird was elected as chairman pro tem. In the absence of the secretary, Dr. Geo. H. Glover was elected to fill the office during the meeting.

The minutes of the previous meeting were adopted as published in the proceedings of the association. The report of the secretary showed that there were fifty-three members in good standing.

The following names were presented and on approval by the executive committee these men were elected to membership: Floyd Cross, Fort Collins; H. S. Eakins, Fort Collins; John H. Copenhaver, Omaha; A. Phillip Immenschuh, Monte Vista; Carrel L. Jones, Delta, and Garrey E. Clark, Fowler.

Dr. Charles G. Lamb, a member of the legislative committee, reported on a bill which he contemplated introducing into the legislature. After a discussion of the matter the following legislative committee was appointed to further our interests: Charles G. Lamb, Geo. H. Glover and W. W. Yard.

The following resolution was presented by Dr. John Bryant and adopted by unanimous vote.

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Drs. Howe & Edwards, 636 E. Grand Ave., Des Moines, Iowa.
W. A. McNeill, Rives, Tenn.
Dr. T. W. Johnston, 646 N. Main St., Dayton, Ohio.
Dr. G. H. Conn, 311 Croghan St., Fremont, O.
Dr. A. G. Wadleigh, La Junta, Colo.
Dr. N. J. Mayer, Mitchell, So. Dak.
Dr. W. L. Edwards, Visalia, Calif.

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nary practitioners and these have been found to be very successful.

"THEREFORE, be it resolved that the Colorado Veterinary Medical Association respectfully petitions the authorities at the State Agricultural College to arrange for such a course."

The matter was left to Dr. George H. Glover to present to the college authorities.

The resolution of condolence regarding the death of Dr. T. H. Quinn was passed and a copy ordered sent to the widow.

The following officers were elected:

President, R. H. Bird.
First Vice-president, George H. Glover.
Second Vice-president, John Bryant.
Secretary-Treasurer, I. E. Newsom.

Executive Board

A. J. Savage.
J. F. Meinzer.
F. W. Culver.

The program presented was as follows:

Coitus Interruptus, F. W. Culver.

Suggestions for the Betterment of the Association, A. G. Fisk.

The Ethics of the Profession of Veterinary Medicine, C. E. Davis.

Vesicular Stomatitis, J. F. Meinzer.

The Whorled Milkweed as a Poisonous Plant, Geo. H. Glover.

Contagious Abortion, C. M. Potter.

Dr. Fisk had recently visited the meeting of the Nebraska association which so impressed him that he offered many suggestions for the betterment of our own state association.

Vesicular stomatitis had recently been prevalent in horses in the San Luis Valley. This outbreak was discussed by Dr. Meinzer, who had seen many of these cases.

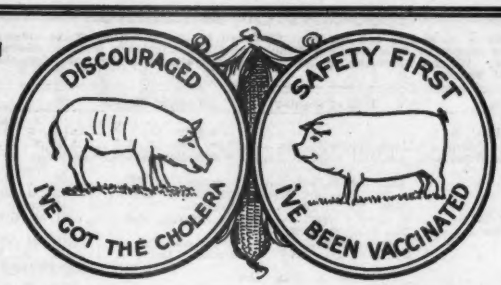
Dr. Glover brought to the attention of the association a considerable number of instances in which large numbers of sheep and cattle had died following the consumption of considerable quantities of the whorled milkweed (Asclepias verticillata). He did not look upon the weed as containing a direct poison, but believed that because of its extremely woody nature deaths resulted rather than from any poisonous principle.

Dr. Potter, who has charge of the contagious abortion work in the Bureau of Animal Industry, gave an excellent talk on the methods recommended by the bureau for eradicating this disease.

At the noon hour, the association was banqueted by the Denver Hog Ranch Company, immediately following which the members paid a visit to the plant of the above named company, an entirely new and modern plant.

Ft. Collins, Colo. I. E. Newsom,
Sec.-Treas.

FRED J. RATHMAN
Manager



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ASSOCIATION MEETINGS

The information given below is up-to-date and has been furnished by the secretaries of the various associations listed. Secretaries are requested to supply us data regarding their associations after each meeting; otherwise, the association will necessarily be dropped from the list. We ask secretaries to kindly co-operate with us in keeping before the members of their associations the date and place of the next meeting.

Name of Association	Date of Meeting	Place of Meeting	Secretary
Alabama Vet. Med. Assn.			C. A. Cary, Auburn, Ala.
Alumni Assn., Col. of Vet. Med., O. S. U.		Columbus, O.	W. R. Hobbs, O. S. U., Columbus, O.
Alumni Assn., N. Y. State Vet. College	June 10, 1916	New York	P. K. Nichols, Port Richmond, N. Y.
Alumni Assn., U. S. Col. Vet. Surg.	April 14, 1917	Washington, D. C.	Chas. M. Mansfield, 1344 Newton St., Washington, D. C.
American Vet. Med. Assn.	Aug. 20-23, 1911	Kansas City, Mo.	L. A. Merillat, 1827 Wabash, Chicago.
Arkansas Vet. Med. Assn.		Clarksdale, Miss.	R. M. Gow, Little Rock.
British Columbia Vet. Assn.	Sept. 21, 22, 1917	Penticton, B. C.	Kenneth Chester, New Westminster, B. C.
B. A. I. Vet. Assn. of So. Omaha	4 times a year	So. Omaha, Neb.	J. W. Giffee, c/o B. A. I., So. Omaha
California State Vet. Med. Assn.	2nd Wed. in Mch., June, Sept., Dec.	Petaluma, Cal.	F. M. Hayes, Davis, Cal.
Central Canada Vet. Assn.	3rd week Jan. 1918	Ottawa, Ont.	A. B. Wickware, Experimental Farm, Ottawa.
Central N. Y. Vet. Med. Assn.	Last week in June and Nov.	Syracuse, N. Y.	W. B. Switzer, Oswego, N. Y.
Chicago Vet. Society	2nd Tues. of month	Chicago, Ill.	A. A. Leibold, 4515 N. Robey St., Chicago.
Colorado Vet. Med. Assn.		Denver, Colo.	I. E. Newsom, Ft. Collins, Colo.
Connecticut Vet. Med. Assn.		Hartford, Conn.	A. T. Gilyard, Waterbury, Conn.
Eastern Iowa Vet. Med. Assn.	Dec. 13	Muscatine, Ia.	Jno. Tillie, Muscatine, Ia.
Genesee County Vet. Med. Assn.			W. J. Houden, Flint, Mich.
Genesee Valley Vet. Med. Assn.	July	Rochester, N. Y.	J. H. Taylor, Henrietta, N. Y.
Georgia State Vet. Assn.	Sept. 18, 19, 1917	Columbus, Ga.	Peter F. Bahnsen, Capitol Bldg., Atlanta.
Hudson Co. Vet. Practitioners' Club	Monthly	Jersey City, N. J.	B. D. Blair, 782 Montgomery St., Jersey City, N. J.
Idaho Assn. of Vet. Graduates		Boise, Idaho	C. V. Williams, Blackfoot, Idaho.
Illinois State Vet. Med. Assn.	July 18, 19	East St. Louis, Ill.	L. A. Merillat, 1827 Wabash Ave., Chicago
Illmo Vet. Med. Assn.	April, 1917	Collinsville, Ill.	L. R. McKinley, Freeburg, Ill.
Indiana Vet. Med. Assn.		Indianapolis, Ind.	Geo. H. Roberts, Indianapolis, Ind.
Iowa Vet. Med. Assn.		Ames, Iowa	H. B. Treman, Rockwell City, Ia.
Kansas Vet. Med. Assn.		Wichita, Kan.	J. H. Burt, Manhattan, Kan.
Kentucky Vet. Med. Assn.	June 20-21, 1917	Shelbyville, Ky.	D. E. Westmorland, Owensboro, Ky.
Keystone Vet. Med. Assn.	2nd Tuesday of month	Philadelphia	L. B. Davis, 357 E. Girard, Philadelphia.
Lake Erie Vet. Med. Assn.	1st Tuesday in Dec.	Norwalk, O.	N. D. Backus, Elyria, O.
Los Angeles Vet. Med. Assn.	3rd Wed. of month	Los Angeles	J. A. Dell, 16th & Pacific, Los Angeles.
Maine Vet. Med. Assn.	April 11	Bangor, Me.	M. E. Maddocks, Augusta, Me.
Manitoba Vet. Assn.		Winnipeg, Man.	W. Hilton, 275 James St., Winnipeg.
Massachusetts Vet. Assn.	4th Wed. each month	Worcester in Sept.; Boston rest of year	F. A. Cahill, Boston, Mass.
Michigan State Vet. Med. Assn.	1st Tues. & Wed. after 1st Mon. in February	Lansing, Mich.	W. Austin Ewalt, Mt. Clemens, Mich.
Minnesota State V. M. Assn.	2nd Tues. & Wed. Jan.	St. Paul	G. Ed. Leech, Winona, Minn.
Mississippi State Vet. Med. Assn.	January 8-9, 1918	Meridian, Miss.	E. S. Norton, Greenville, Miss.
Mississippi Valley Vet. Med. Assn.	July 7, 1916	Galesburg, Ill.	W. Lester Hollister, Avon, Ill.
Missouri Valley Vet. Assn.		St. Joseph, Mo.	R. F. Bourne, 1336 E. 15th, Kansas City.
Missouri Vet. Med. Assn.	Last week in July	Neosho, Mo.	C. D. Folse, 1336 E. 15th St., Kansas City
Montana Vet. Med. Assn.	Sept. 26-27, 1917	Helena, Mont.	A. D. Knowles, Missoula, Mont.
Nat'l Assn. B. A. I. Employees	2nd Mon. in Aug., 1917	Omaha, Neb.	S. J. Walkley, 185 N. W. Ave., Milwaukee.
Nebraska Vet. Med. Assn.	2nd Tues. & Wed. in Dec.	Lincoln, Neb.	S. W. Alford, Lincoln, Neb.

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Name of Association	Date of Meeting	Place of Meeting	Secretary
New York State Vet. Med. Society	July 25, 26, 27	Brooklyn, N. Y.	C. P. Fitch, Ithaca, N. Y.
North Carolina Vet. Med. Assn.	June 26, 27, 1917	Charlotte, N. C.	J. P. Spoon, Burlington, N. C.
North Dakota Vet. Assn.	July, 1917	Fargo, N. D.	W. J. Mulrooney, Havana, N. D.
Northeastern Indiana Vet. Assn.		Ft. Wayne, Ind.	R. M. Boyd, Avilla, Ind.
Northwestern Ohio Vet. Med. Assn.	Feb. 21	Toledo, O.	Paul E. Wood, Ottawa, Ohio.
Ohio State Vet. Med. Assn.		O. S. U. Columbus, O.	F. A. Lambert, care O. S. U., Columbus.
Ohio Valley Vet. Med. Assn.	July	Oakland City, Ind.	C. S. Henry, Terre Haute, Ind.
Oklahoma State Vet. Med. Assn.	Oct. 23, 24, 25	Oklahoma City	R. C. Smith, Enid, Okla.
Oregon Vet. Med. Society	June, 1917	Probably Salem, Ore.	B. T. Simms, Corvallis, Ore.
Pennsylvania State Vet. Med. Assn.		Harrisburg, Pa.	E. H. Yunker, 2344 N. 18th, Philadelphia.
Rhode Island Vet. Med. Assn.	2nd Tues. Jan.		U. S. Richards, Woonsocket, R. I.
Schuylkill Valley Vet. Med. Assn.	June 30	Reading, Pa.	C. R. Potteiger, Reading, Pa.
South Dakota Vet. Med. Assn.	July	Watertown, S. D.	S. W. Allen, Watertown, S. D.
Southeastern States Vet. Med. Assn.		Atlanta, Ga.	G. A. Roberts, West Raleigh, N. C.
Southern Aux. Cal. State Vet. Med. Assn.		Los Angeles	J. A. Dell, 16th & Pacific, Los Angeles.
S. W. Michigan Vet. Med. Assn.	January, 1918	Niles, Mich.	L. A. Minter, Niles, Mich.
Tenn. Vet. Med. Assn.	Nov., 1917	Columbia, Tenn.	F. R. Youree, Lebanon, Tenn.
Texas Vet. Med. Assn.		Not decided	E. M. Wiggs, Greenville, Texas.
Tri-County Vet. Med. Assn.	March 14	Liberty, Ind.	Geo. G. Ferling, Richmond, Ind.
Twin City Vet. Med. Society	Once a month	St. Paul	C. C. Palmer, St. Paul, Minn.
U. S. Live Stock Sanitary Assn.		Chicago	H. S. Ward, St. Paul, Minn.
Utah Vet. Med. Assn.		Logan, Utah	E. P. Coburn, Brighton City, Utah.
Veterinary Assn. of Saskatchewan	March 15, 1917	Regina, Sask.	R. G. Chasmar, Hanley, Sask.
Vet. Med. Assn. of New Jersey	2nd Thurs. in Jan.	Trenton, N. J.	E. L. Loblein, New Brunswick, N. J.
Vet. Med. Assn. of N. Y. City	1st Wed. ea. mo. except July, Aug., Sept.	New York City	R. S. MacKellar, 351 W. 11th St., N. Y.
Vet. Med. Assn. of Geo. Washington Univ.	1st Sat. each month	Washington, D. C.	C. W. Rippon, 2115 14th St., N. W., Washington, D. C.
Vet. Med. Society Wash. State College	1st and 2nd Tues. ea. mo.	Pullman, Wash.	Claude Holden.
Virginia State Vet. Med. Assn.	July 12, 1917	Norfolk, Va.	W. G. Chrisman, Blacksburg, Va.
Washington State Vet. Med. Assn.	June, 1917	Pullman, Wash.	Carl Cosier, Bellingham, Wash.
Western N. Y. Vet. Med. Assn.	4th week, June, 1917	Buffalo, N. Y.	F. F. Febr, 36 Prospect Ave., Buffalo.
Wisconsin Vet. Med. Assn.		Madison, Wis.	W. A. Wolcott, Madison, Wis.
York Co. Vet. Med. Society	1st Tues. after 1st. Mon. of each month	York, Pa.	E. S. Bausticker, 335 Newberry, York, Pa.

MONTANA VETERINARY MEETING

The mid-winter meeting of the Montana Veterinary Medical Association was held at Missoula, January 5th and 6th. The address of welcome was delivered by Mayor H. T. Wilkinson and a response was made by Dr. W. J. Butler, state veterinarian. This was followed by the president's address in which Dr. M. E. Knowles pointed out a number of animal diseases transmissible to man and urged a closer co-operation between the medical and veterinary professions to the end that such maladies might be overcome.

A symposium on meat and milk inspection was held to which the public was invited and representatives of the women's clubs and local physicians were represented on the program. Papers on meat and milk inspection were read by Dr. J. F. Mitchell, of Anaconda; Dr. N. T. Gunn, Miss Gertrude F. Sloan, trained nurse, of Missoula;

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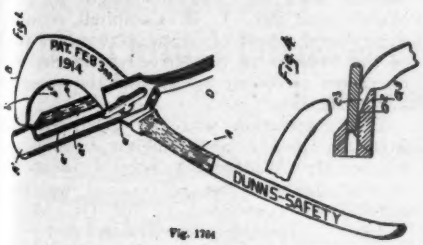

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American Journal of Veterinary Medicine

9 So. Clinton Street CHICAGO, ILL.

Dr. E. C. Anderson, city physician, of Missoula; Dr. Howard Welch and Dr. W. J. Butler.

Dr. Anderson is of the opinion that the present system of meat and milk inspection is quite sufficient and made the point that agitation for meat and milk inspection has been spasmodically carried on for a great many years, and expressed the belief that unless considerably more money were available for use, the present system could not be improved upon. Dr. Welch exhibited lantern pictures showing all classes of dairy cows, barns and yards from the poorest to the best of each. The main feature of Dr. Butler's address was the advocacy of municipally owned slaughter houses and municipally owned dairy depots for an ideal meat and milk inspection service.

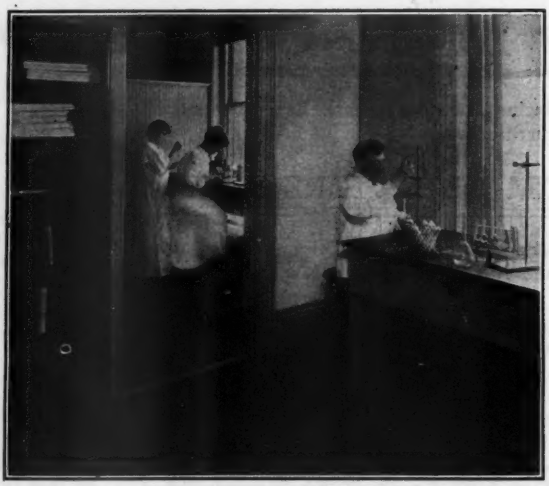
Dr. O. J. Johnson, of Miles City, and Dr. A. D. Knowles, of Missoula, were the two members of the association elected from whom the governor might appoint one for the state board of veterinary examiners. A committee to confer with the state board of education relative to making arrangements for veterinarians to lecture before the high schools of the state on subjects of veterinary sanitation, was appointed consisting of Drs. W. J. Butler, Howard Welch, J. F. Mitchell, M. E. Knowles and N. T. Gunn.

The present status of the study of contagious abortion was discussed by Dr. Welch, and Mr. J. R. Campbell, county agricultural agent of Missoula county, told of the benefits to be derived from the cooperation of county agents and the veterinary profession.

The association was the guest of the Missoula chamber of commerce at luncheon, where Mr. William Wayne, a local attorney, delivered an address of welcome which was responded to by Dr. M. E. Knowles. Speeches were also made by Dr. W. J. Butler and Dr. E. C. Anderson. Dr. G. T. McCullough, representing the state medical association, spoke on the extermination of the wood tick. His experience covered a period of several years of local practice, and he related a number of cases of spotted fever which he had attended. He also described the various systems for destroying the wood tick, which is the carrier of spotted fever, and expressed the belief that tincture of iodin was probably the best disinfectant for the bite of the tick. A question box was conducted with a number of very interesting questions and answers.

Upon invitation of the commercial club of Great Falls, the association voted to hold its mid-winter session in that city in 1918.

Dr. A. H. Cheney, of Polson, exhibited



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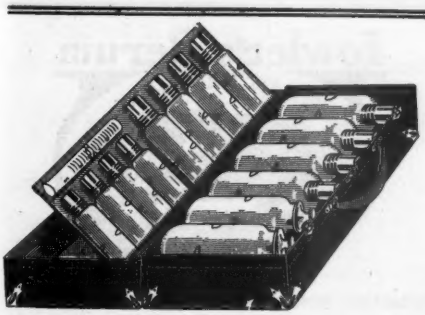

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a specimen of water hemlock and discussed hemlock poisoning of some cattle, experienced in his practice. He gave the history that the cattle had died very suddenly without any indication of previous sickness, that upon post mortem he recovered some of the stocks of the hemlock in the rumen of one of the cattle, and then upon search found an abundance of the poisonous plant growing in a nearby pond.

Missoula, Mont. A. D. KNOWLES,
Sec.-Treas.

MISSISSIPPI STATE VETERINARY ASSOCIATION

The annual meeting of the Mississippi State Veterinary Medical Association held at Clarksdale on January 9th and 10th, 1917, was, without a doubt, the best ever held in the state. The papers and addresses, the large clinic at Dr. W. L. Gates' hospital and the entertainment by the City of Clarksdale could not be excelled.

The members met at the Elks Club Tuesday morning at 9 a. m., where the mayor, Hon. J. C. McNair, welcomed us to the city with a short address, which was ably responded to by Dr. W. P. Ferguson, of Grenada. Dr. E. M. Alderman then read his paper on Choke in the Horse. Dr. R. C. Moore, St. Joseph, Mo., gave an address on the Requisites for Successful Surgery and was followed by Dr. L. A. Merillat of Chicago on Field and Hospital Surgery. Dr. Moore and Dr. Merillat gave well prepared addresses covering the field of surgery in a very thorough manner.

At the afternoon session Dr. John Oliver read a paper on the Surgical Treatment of Hernias. Dr. B. M. Davenport gave a report on the Serum Treatment of Anthrax prior to Dr. W. H. Dalrymple's paper on Anthrax. Dr. Dalrymple covered the subject of anthrax and his paper was thoroughly enjoyed by the members, especially those in the sections of the state where anthrax was prevalent last year.

Owing to sickness Dr. N. C. Nelson was not present but Dr. H. K. Wright of Mulford and Company replaced him. Dr. Wright told us about the preparation of hog cholera serum and took up the various phases of vaccination. Dr. H. Chadwick spoke on Tick Eradication and What it Means to the Veterinarian. We were told of the work and the difficulties that had been met and that by January, 1918, the state of Mississippi would probably be free from the Texas fever tick.

Dr. S. L. Stewart of Kansas City gave an interesting address on Navel Ill, illustrating his paper with lantern slides, showing the various conditions that were met in the disease.

Twenty-four of our 48 members responded

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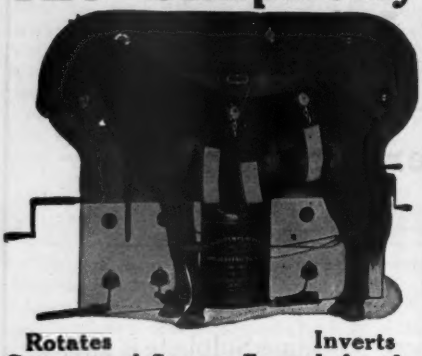

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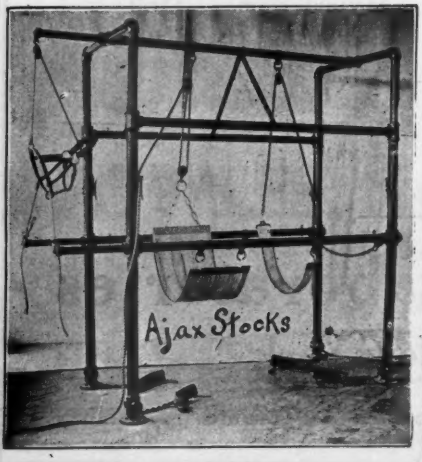


to the roll call at the opening of the second session. Owing to the length of the minutes they were approved without reading. The treasurer then gave his report showing a balance in the treasury of $135.89.

The president's address reviewed the veterinary situation in the state. Dr. Lewis mentioned especially the fact that the county farm demonstrators and members of the medical profession were doing a great deal of veterinary practice.

The executive then gave their report and recommended for membership the following men who were elected, viz.: R. H. Mohlenhoff, C. W. Denman, A. I. Jones, J. W. Burras, F. L. Parse, B. T. Huston, C. McMillian, T. S. Mason, W. J. Lacy.

Considerable discussion was brought up about the farm demonstrators, students of the A. & M. College, and members of the medical profession vaccinating livestock for anthrax, cattle for black leg, testing cattle for tuberculosis, using virus for the simultaneous vaccination of hogs, castration of colts, etc. The matter was finally dismissed by the president appointing Dr. J. A. Beavers, Dr. W. P. Ferguson and Dr. John Oliver to draft resolutions to present to Mr. R. S. Wilson, in charge of the county farm demonstrators in Mississippi; Hon. P. P. Garner, president Mississippi Livestock Sanitary Board, and the president of the A. & M. College, and a copy to be presented to the veterinary journals for publication.

Dr. James Lewis of Greenwood and Dr. J. A. Beavers of Canton were elected to serve four years on the examining board. The following officers were elected to serve the association for the coming year: Dr. H. Chadwick, president; Dr. W. R. Edwards, vice-president, and Dr. E. S. Morton, secretary-treasurer.

By vote it was decided to hold the next meeting on the second Tuesday and Wednesday of January, 1918, at Meridian, Miss.

An entire day was used in clinical work. Some thirty-five animals were gathered together by Dr. Gates for operations and diagnosis. Following are the operations performed and the veterinarians performing same:

Gray horse mule—Fistula on inside of right hind leg between hock and stifle joints, by Dr. O. M. Norton.

Bay horse mule—Fistula of withers, by Dr. L. A. Merillat.

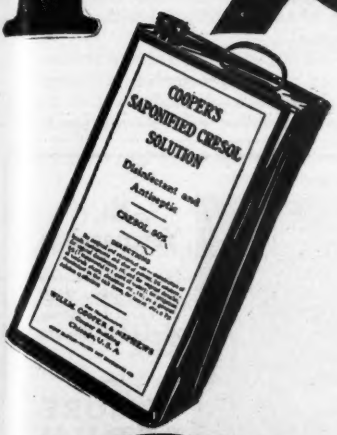
Bay gelding—Fistula of withers, by Dr. L. A. Merillat.

Sorrel mare—Tenotomy by Dr. John Oliver.

Black mare—Ringbone by Dr. L. A. Merillat.

Bay mare—Extracting teeth and trephining sinus by Dr. Merillat.

Rx



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Bay mare—Spavin—cunean tenotomy by Dr. L. A. Merillat.

Pig—Double scrotal hernia by Dr. S. L. Stewart.

Gray mule—Fistula of withers by Dr. John Oliver.

Castration of Ridgling boar, by Dr. L. A. Merillat.

May mare mule—Fistula of withers, by Dr. John Oliver.

Dog—Removal of eye and replacing with glass eye, by Dr. Oliver.

The balance of the clinic was for diagnosis and treatment. Dr. Gates showed us a mule that had been giving milk for about two years. There were several cases of lameness; one horse with sleepy staggers; a horse with a broken hip; one horse with cyst in the gluteal muscles; a mule with crooked feet; a dog with mange, etc.

The banquet at the Alcazar Hotel brought the meeting to a successful close and it was voted by the members that this was the best meeting that we have ever held.

Drug and instrument displays by Sharp and Smith, The Abbott Laboratories, H. K. Mulford Co., and John T. Milliken and Co. were present. These displays were large and appropriate and received much favorable comment by the members.

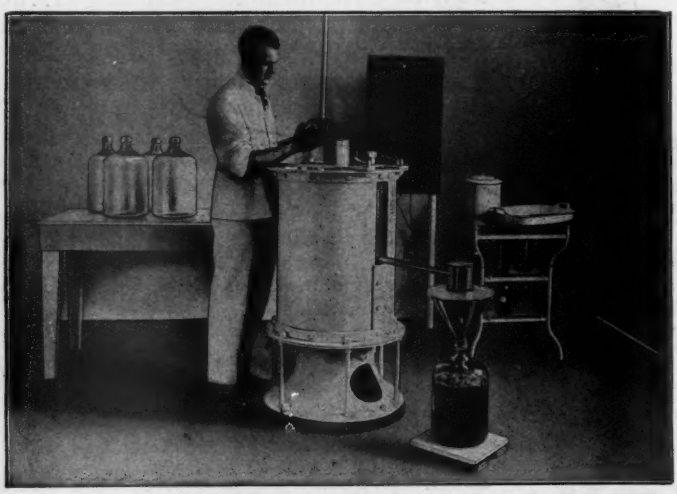
E. S. NORTON, V. M. D.,
Greenville, Miss. *Secretary.*

CONVICTION FOR SELLING DISEASED ANIMALS

A case which is of particular interest to farmers, veterinarians and dealers in live stock has been on trial during the past two weeks in Pennsylvania before Judge Stewart and a jury in the Northampton county court. On March 25 and April 15, 1916 the defendant H. C. Kramlich an extensive dealer in live stock at Northampton, Pa. offered 850 hogs at public sales. Shortly after the sales, agents of the Pennsylvania livestock sanitary board found a number of the hogs dying from hog cholera on seventy-two farms of purchasers in Northampton and Lehigh counties. The losses aggregated about 400 head including swine previously owned on the farms which became infected from animals purchased at the sales.

The board promptly vaccinated a large number of hogs which had been exposed to this infection. Investigation conducted by the state veterinarian showed that the hogs were infected with cholera when Kramlich shipped them from Cumberland county, Pa., to his sales at Northampton and prosecution was ordered under the livestock law which forbids the sale of animals affected with a transmissible disease.

The case was bitterly contested and attracted the attendance of a large number of farmers and livestock dealers throughout the two weeks' trial. It resulted in a victory for the



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board as the jury returned a verdict of guilty. The cost in the case will be heavy as there were about eighty witnesses in attendance, including a number of veterinarians who gave expert testimony. The purchasers may bring suit against Mr. Kramlich to recover their losses.

The board is determined to protect the farmers and livestock interests in Pennsylvania

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from unscrupulous or careless dealers who spread dangerous diseases among animals. This case was the first of its kind under the livestock law and it is believed that much good will result from a conviction of this kind. —C. J. M.

Dr. and Mrs. W. B. Washburn, Tiffin, Ohio, spent February and March in the South; stopping the while at a number of points in Cuba.

Twelve hundred Mexican quail imported by the Ohio state fish and game warden were vaccinated for the prevention of cholera recently by the veterinarians of the Ohio State University.

A veterinary conference was held at Purdue University, Lafayette, Ind., February 27th and 28th. Among the out-of-town speakers on the program were Dr. M. H. Reynolds of the University of Minnesota and Dr. Ward Giltner of the Michigan Agricultural College.

Dr. and Mrs. J. C. Christiansen, of Mt. Vernon, S. D., announced an important addition to their family on January 27th in the person of Violet Mae Christiansen.

Smeed Bros., of Caldwell, Idaho, will erect a modern veterinary hospital at the union stock yards in that city.

Dr. J. C. Booker, of Cuba, Mo., has been appointed deputy state veterinarian. Dr. Booker practiced at Alton, Ill., for many years before he moved to Missouri.

Dr. John J. Pink, of Oconomowoc, Wis., 50 years old, died of pneumonia after a brief illness, February 6th. He graduated from the Ontario Veterinary College in 1890 and had been in practice at Oconomowoc since that time.

The Indiana state senate passed a bill February 24th providing that anti-hog-cholera serum should be sold direct to farmers as well as to veterinarians and that a uniform price must be charged all buyers.

At their ninth annual banquet, February 23rd, the students of the veterinary medical association of the Alabama Polytechnic Institute, Auburn, Ala., had as guests the members of the Alabama Veterinary Medical Association, a number of visiting veterinarians from other states and the members of the faculty. Dr. C. A. Cary, State Veterinarian, acted as toastmaster, and President

DR. L. B. GRAHAM, President and Gen. Manager
W. J. MENARY, Treasurer
DR. J. W. GRIFFITH, Secretary

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C. C. Thach of the institute, Dr. Geo. R. White, of Tennessee, Dr. B. B. Ross, Dr. E. D. King, Dr. F. P. Wolf and Dr. F. P. Caughman responded to toasts. The veterinary course at the institute will be increased to four years beginning with the session of 1917-1918.

Dr. Edward N. Leavy, veterinarian for the American S. P. C. A., New York, N. Y., was recently called to set the broken wing of a cockatoo belonging to Miss Elsie Janis, the noted actress. The bird was given to Miss Janis by Alfred Vanderbilt, and is said to be the most beautiful white sulphur crested cockatoo known. Dr. Leavy has made a specialty of the treatment of birds.

Dr. Don C. Ayer, for ten years chief of the local federal veterinary office at Omaha and for several years chief of the veterinary office at Kansas City, died at Freewater, Oregon, February 6th, aged 71 years.

Dr. A. A. Clark has erected a modern brick hospital building at Ridgefarm, Ill.

The Cleveland, Ohio, veterinary association, the team owner's association and the humane society, by soliciting funds among their members, enabled the Cleveland work horse parade association to purchase a $2,700 veterinary ambulance.

Dr. H. L. Campbell, formerly of Christian county, has located for practice at New Douglas, Ill.

Dr. E. G. Cluts, of Canton, Ill., died of pneumonia at his home February 11th. He was a graduate of the Western Veterinary College and also attended the Chicago Veterinary College. He had practiced in Canton and vicinity for 17 years. Dr. J. D. Cluts, his brother, has moved to Canton to take charge of the practice.

According to a recent report of W. H. Phipps, food and dairy inspector, Kansas City, Mo., during the year 1916, 10,475 cows in Missouri and 6,695 cows in Kansas which contribute to Kansas City's milk supply were tested for tuberculosis. Of these, 161 in Missouri, and 33 in Kansas were found to be diseased.

A bill was introduced in the Minnesota state senate, February 20th, authorizing the licensing of veterinarians who have practiced for fifteen years, without examination.

Veterinarians of Allegan, Kent, Ottawa and Muskegon counties, Michigan, met at

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Grand Rapids, February 23rd, and organized an association to co-operate with the Bureau of Animal Industry and state live stock sanitary commission in the control of infectious diseases of animals.

Dr. H. B. Crandall, of Syracuse, N. Y., after an illness of three and a half years, died at his home February 2nd. He had practiced veterinary medicine in that city for twenty years previous to his illness.

A veterinarian, at Covington, Ind., removed two pieces of oak wood from a horse's head. The owner said the wood had been there for ten years, having been acquired by the horse when striking its head against an oak tree. The owner's head was not examined.

The Greenville, Miss., Daily Democrat, contains an excellent write-up of the hospital and practice of Drs. O. M. and E. S. Norton. The Norton brothers are graduates of the University of Pennsylvania veterinary department, Dr. O. M. Norton having practiced in Greenville since 1907, his brother having joined him in 1912. They have recently remodeled and built an addition to their hospital.

Reports from the battlefields of Europe indicate that the American mule has become a great favorite with the armies. He can stand days and nights of unceasing labor, short rations and little or no attention better than the horse. If a horse stumbles into a shell hole filled with water he exhausts himself in struggling to get out, but a mule simply waits until they dig him out. The thick skin of the mule wards off mud blisters and affections that

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Two American veterinarians, Dr. Orville McKim, of Watertown, N. Y., and Dr. Richard Zabriskie, of Englewood, N. J., and two ship surgeons, Dr. John Davis, of Columbus, Miss., and Dr. H. D. Snyder, of Norfolk, Va., who were among the captives of the German South Atlantic raider and brought to Germany on the steamship Yarrowdale, were released and arrived at Copenhagen, March 2nd. These men were classed as officers and had been confined in a camp apart from the other Americans captured. Dr. Zabriskie was veterinarian on the steamship Mount Temple, a Canadian horse transport, and Dr. McKim was on the White Star liner Georgic. Notwithstanding that they were confined in the officers' camp, their rations were very meager, but they speak very highly of the camp commander, Maj. Schonebeck, and his assistant, Lieut. von Friesen, who did everything in their power to lighten the lot of the prisoners. They passed through four airplane attacks on Karlsruhe, where the bombs intended for the railroad station fell on all sides of their camp.

Dr. Samuel Glasson, Jr., late veterinarian of the 7th U. S. cavalry, has been retired with the rank of captain, and has changed his location from Columbus, N. M., to 34 W. 44th St., New York City.

Dr. H. M. Newton, veterinarian of the Bureau of Animal Industry, was the principal speaker at the farmers' institute at Swartz Creek, Mich., February 2nd.

The Edgar County Graduate Veterinary Medical Association was organized at Paris, Ill., January 25th. Dr. W. B. VanCleve, of Chrisman, was elected president; Dr. Franklin Adams, of Paris, secretary and treasurer.

The veterinary division of Clemson College, South Carolina, reports that over half a million mils. of serum were sent out to the farmers of the state in 1916.

Representative Ward, of Michigan, is in favor of exempting graduates of veterinary colleges of the state for 1916 and 1917 from examination for a license to practice.

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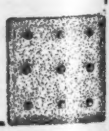

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Dr. Moore of the firm of veterinarians, Brown & Moore, Galesburg, Ill., died at his home March 3rd. Dr. Moore came from Minnesota and his remains were taken there for burial.

Dr. I. W. Allen, of Cayuga, Ind., has moved to Oklahoma City, Okla., where he has accepted a position with Bureau of Animal Industry.

Dr. Adam T. Knowles, of Cheyenne, Wyo., who has been connected with the United States Bureau of Animal Industry for the past twelve years, having been veterinarian-in-charge for the state of Wyoming, will associate himself in practice with his brother, Dr. A. D. Knowles, at Missoula, Mont., March 1st.

FACULTY CHANGES AT MANHATTAN

Dr. James W. Benner has resigned as instructor in the veterinary department of Kansas State Agricultural College and accepted a position as assistant professor in the veterinary department of the Michigan Agricultural College. He is succeeded at the Kansas college by Dr. J. P. Scott, who

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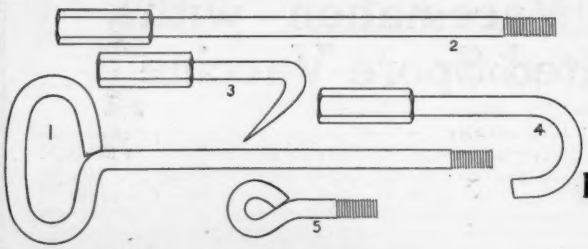

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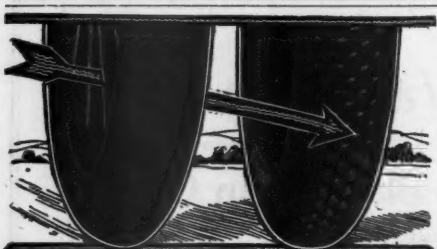

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was appointed a fellow in pathology last fall. Kurt Peiser, assistant in bacteriology, has left the Kansas institution to become milk inspector in Cleveland, Ohio, and has been succeeded by J. R. McClung, formerly assistant in chemistry. Dr. Thos. P. Haslam, assistant professor of veterinary medicine, severed his connections with the college February 1st, and will engage in commercial undertakings.

SCHOENLEBER RESIGNS K. S. A. C. POST

Dr. F. S. Schoenleber, head of the department of veterinary medicine, Kansas State Agricultural College, has severed his connection with that institution, his resignation having taken effect March 1st. Dr. Schoenleber has been with the Kansas agricultural college for twelve years. He has seen the veterinary course in the institution established and the erection of all the Veterinary buildings now on the campus. He has not made public his plans for the future.

It is reported that the position has been offered to Dr. John H. McNeil, recently of the Experiment Station at Sao Paulo, Brazil.

Dr. John G. Hayes, of Freeport, Ill., held a closing-out sale of his livery business on February 17th. He said the field was becoming limited on account of the increasing number of automobiles.

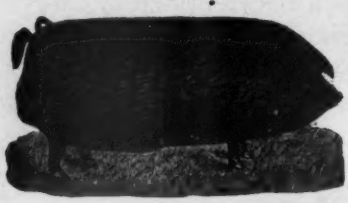
A farmer near Capa, S. D., while shoveling away a huge snow drift near his barn uncovered one of his cows that had been missing for two weeks. The animal was alive, but somewhat hungy.

Dr. G. H. Conn, of Fremont, Ohio, delivered lectures to farmers on farm management and hog cholera control at Woodville, Helena and other towns in that vicinity, during January.

SALE OF NOTED HERD

Dr. Jerry Wolfe of Grand Mound, Iowa, sends in the following interesting item. The herd of Scotch Shorthorns owned by G. H. George on Monticello, Iowa, was sold at private sale during the early part of January to Tom Stanton of Wheaton, Ill. The entire herd of eighty head sold for $58,000, or $725 per head. This herd is headed by Selection, who was first and grand champion at the leading shows in 1909, including the International at Chicago. He was sired by Great Avondale and is of the noted Marrmissie family. The females in the herd are of fashionable Scotch breeding, from noted sires, and are a worthy lot to mate with Selection. This herd was given the tuberculin test by Drs. Tom Chandler, J. H. Spence, C. M. Morgan and Jerry Wolfe, Assistant State Veterinarians of Iowa.

U. S. Veterinary License No. 32



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